EDISON
Electric Institute
BULLETIN

NOVEMBER, 1935

STATISTICAL DATA OF THE ELECTRIC LIGHT AND POWER INDUSTRY

Compiled Monthly by the Edison Electric Institute—Covers 100% of the Industry

DURING THE MONTH OF SEPTEMBER (*Preliminary*)

	1935	1934	%
Kilowatt-hours Generated* (net)			
By Fuel	4,935,575,000	4,573,851,000	+ 7.9
By Water Power	2,718,792,000	2,188,480,000	+24.2
Total Kilowatt-hours Generated	7,654,367,000	6,762,331,000	+13.2
Additions to Supply			
Energy Purchased from Other Sources	203,421,000	146,930,000	+38.4
New International Imports	89,190,000	75,518,000	+18.1
Total	292,611,000	222,448,000	+31.5
Deductions from Supply			
Energy Used in Electric Railway Departments	40,729,000	46,113,000	−11.7
Energy Used in Electric and Other Departments	110,827,000	106,406,000	+ 4.2
Total	151,556,000	152,519,000	− 0.6
Total Energy for Distribution	**7,795,422,000**	**6,832,260,000**	**+14.1**
Energy Lost in Transmission, Distribution, etc.	**1,160,616,000**	**1,058,097,000**	**+ 9.7**
Kilowatt-hours Sold to Ultimate Consumers	**6,634,806,000**	**5,774,163,000**	**+14.9**
Sales to Ultimate Consumers (kw-hrs)			
Domestic Service	1,134,783,000	1,023,843,000	+10.8
Commercial—Small Light and Power (Retail)	1,192,068,000	1,110,895,000	+ 7.3
Commercial—Large Light and Power (Wholesale)	3,676,127,000	3,034,140,000	+21.2
Municipal Street Lighting	188,960,000	179,884,000	+ 5.0
Railroads—Street and Interurban	327,860,000	322,715,000	+ 1.6
Railroads—Electrified Steam	67,200,000	54,512,000	+23.3
Municipal and Miscellaneous	47,808,000	48,174,000	− 0.8
Total Sales to Ultimate Consumers	6,634,806,000	5,774,163,000	+14.9
Total Revenue from Ultimate Consumers	$159,072,800	$150,196,400	+ 5.9

DURING TWELVE MONTHS ENDING SEPTEMBER 30th

Kilowatt-hours Generated* (net)			
By Fuel	53,139,636,000	53,236,296,000	− 0.2
By Water Power	36,245,599,000	29,955,583,000	+21.0
Total Kilowatt-hours Generated	89,385,235,000	83,191,879,000	+ 7.4
Purchased Energy (net)	2,982,516,000	3,213,947,000	− 7.2
Energy Used in Electric Railway and Other Departments	1,970,381,000	1,990,568,000	− 1.0
Total Energy for Distribution	**90,397,370,000**	**84,415,258,000**	**+ 7.1**
Energy Lost in Transmission, Distribution, etc.	**15,518,528,000**	**14,550,160,000**	**+ 6.7**
Kilowatt-hours Sold to Ultimate Consumers	**74,878,842,000**	**69,865,098,000**	**+ 7.2**
Total Revenue from Ultimate Consumers	**$1,895,558,600**	**$1,817,474,500**	**+ 4.3**
Important Factors			
Percent of Energy Generated by Waterpower	40.5%	36.0%	
Average Pounds of Coal per Kilowatt-hour	1.44#	1.45#	
Domestic Service (Residential Use)			
Average Annual Consumption per Customer (kw-hr)	660	623	+ 5.9
Average Revenue per kw-hr (Cents)	5.13¢	5.34¢	− 3.9
Average Monthly Bill per Domestic Customer	$2.82	$2.77	+ 1.8

BASIC INFORMATION AS OF SEPTEMBER 30th

Generating Capacity (kw)—Steam	23,705,400	23,799,100	
—Waterpower	8,956,800	9,005,400	
—Internal Combustion	500,000	468,100	
Total Generating Capacity in Kilowatts	33,162,200	33,272,600	
Number of Customers			
Farms in Eastern Area (Included with Domestic)	(562,079)	(516,595)	
Farms in Western Area (Included with Commercial—Large)	(215,838)	(209,140)	
Domestic Service	20,897,743	20,387,162	
Commercial—Small Light and Power	3,767,932	3,715,430	
Commerical—Large Light and Power	514,580	530,119	
Other Ultimate Consumers	67,574	68,124	
Total Ultimate Consumers	25,247,829	24,700,835	

* By courtesy of the U. S. Geological Survey with deductions for certain plants not considered Electric Light and Power Enterprises.
** Preliminary data. Final figures will be issued by states.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume III NOVEMBER, 1935 No. 11

United States Leads in Rural Electrification

Washington's Picture of "Backward America" Misleading — More Labor-Saving Devices in the American Home Than Anywhere Else in the World

By H. S. Bennion
Edison Electric Institute

IN FARM electrification, as in other fields of electrical development, the electric light and power companies in the United States have been the pioneers and leaders in extending electric lines into farm territory and in developing equipment, methods and uses for making electricity profitable as well as convenient for the farmers. Other countries have profited by this pioneering and have followed suit, but in none has equal progress been made.

Now come a few Federal Government officials to incorrectly brand America as backward in the field of rural electrification. Ignoring the effort and ingenuity put forth by the electric light and power industry in building up farm electrification and unappreciative — through lack of experience—of the economic obstacles in extending power lines into scattered farm territory, these officials have seized upon fragmentary information concerning the percentage of electric customers in certain densely populated countries as a basis for this recklessly inaccurate characterization.

Adverse Comment

In commenting adversely on the position of America in rural electrification, evidently to belittle what has been accomplished in this country, the Administrator of the Rural Electrification Administration in Washington, in a national broadcast not long ago, made the following misleading comparison between the United States and Japan: "Actually only one farm in nine in this country as yet is enjoying electric service." . . . "Yet, in Japan, nine out of every ten homes are benefited by electric service." Note that he compared electrification of farm homes in America with electrification of all classes of homes in Japan. The total electrification of homes in America is 70 per cent. In the states of denser population this percentage is 95 to 98 per cent, which is considerably higher than the 90 per cent figure for Japan.

In this same broadcast it was stated, "If we go to Europe, we find the leading nations far in advance of the United States in providing electrification for rural areas. . . . In Sweden, over 40 per cent of the farms are electrified." In comparable sections of the United States, 60 to 70 per cent of the farms are served with electricity.

On another occasion, this same official remarked, "Yet, in one field we lag behind the most progressive countries of Western and Northern Europe. . . . Western and Northern Europe have outstripped us in the matter (rural electrification)."

Unfortunately, there are practically no statistics available showing the state of rural electrification in any countries except the United States and Canada. Therefore, we must rely upon occasional articles or statements containing estimates or upon such general statistics as would indicate progress in rural electrification in other countries.

The United States is a large country with a comparatively low population density. In this respect it resembles Canada and Russia. It has densely populated sections, and if comparisons are to be made with such countries as Japan, Great Britain, France or Sweden, the comparisons should be made with those sections of the United States of comparable density. If this were done, it would be found that rural electrification in such sections is far ahead of rural electrification in any of the countries named in percentage of farms served and in every other respect.

Factors Affecting Number of Farms Served

Population Density

Population density is one of the factors affecting the percentage of homes in a country reached by electric lines. The following table shows the total area and population density per square mile for the United States, Japan, Great Britain, Sweden and Norway, as given in the 1935 edition of the World Almanac:

	Area Square Miles	*Population Density per Square Mile*
United States	3,027,000	41
Japan	148,756	433
Great Britain	88,745	505
France	212,659	197
Sweden	173,157	36
Norway	124,964	24

The population density in Japan, Great Britain and France is much greater than that of the United States. In Norway and Sweden the average density is low, but the bulk of the population is concentrated in small areas so as to give a high density in those areas.

Size of Farm

Another factor in rural electrification is the size of farm because this gives some measure of distances between farm homes. The following table compiled from data in the International

Yearbook of Agricultural Statistics, 1931-1932, shows that the average crop land of the American farm is twenty-three times the size of the crop land on the Japanese farm and more than five times the crop land on the average French farm. The general average size of farms in the United States, including crop land, pastures and wood lots, is 157 acres. Similar information is not available for foreign farm lands, but it is reasonable to suppose that the ratio of size of the average farm in the United States as compared with the size of the average farm in Japan is even greater than the ratio of crop land areas stated below:

	Land Devoted to Crops (Acres)
France	54,764,773 (2)
Japan	14,497,357 (2)
Norway	1,952,090 (4)
Sweden	9,199,533 (4)
*United States	341,993,813 (4)

Notes: (1) Figure for 1927
(2) " " 1930
(3) Taken from 1933-34 Yearbook
(4) Figure for 1931
(5) " " 1929
(6) " from World Almanac

* U. S. Bureau of Census, 1930, reports the average size of farms in the United States to be 157 acres including crop land, pastures and wood lot connected with farm operation.

Number of Farms Per Mile of Road

In Sweden there are 644,000 farms and 47,000 miles of highway, or about 14 farms per mile of road. In France there are 5,500,000 farms and 436,000 miles of roads, or 12.6 farms per mile of road. In the United States as a whole there were in 1930 only 2.09 farms per mile of road.

Concentration of Farms

In the progress of rural electrification, more important than average population density or the number of farms per mile of road is the congregation of farms in limited areas to produce a heavy farm density. The state of Utah, for instance, has an area almost equal to that of Great Britain and an average population density of only 6.2 persons per square mile as compared with 505 persons per square mile in Great Britain. The farms in Utah, however, are comparatively small and the cultivated lands of that state aggregate only 3 per cent of the area of the state. This is one of the important reasons why over 60 per cent of the farms in Utah are electrified. In the narrow valleys of Norway the small farms are crowded together in a manner to render comparatively simple the building of electric lines to reach many of the farm homes.

Total Electrification in Areas of Denser Population

In the government comparisons of rural electrification in America with electrification in Japan, it was pointed out that nine out of every ten homes in Japan are benefited by electric service. In the more densely populated states of America, such as New Jersey and Massachusetts, 95 to 98 per cent of all

Number of Farms	Average Acres of Crop Land per Farm	Avg. Number Farms per Square Mile
5,500,000 (6)	10.0	26
5,599,670 (3)	2.6	38
298,360 (3)	6.5	2
644,114 (3)	14.3	4
6,288,648 (3 and 2)	54.4	2

homes are electrified. In Great Britain, notwithstanding the density of population, only 35 per cent of the homes were electrified in 1934, according to a statement by Mr. J. M. Kennedy, Member of the British Electricity Commission, as reported in *Electrical World* of March 16, 1935. France in 1927 was estimated to have less than 40 per cent of its homes electrified.

Rural Electrification in the United States

In the United States as a whole, at the present time, there are approximately 775,000 farms served by electric power lines. This is 12 per cent of the total farms of the country. One farm in every eight has electric service. About 150,000 additional farms are reached by existing power lines, but have not yet taken the service.

The figures just given relate strictly to farm electrification. If we include hamlets, villages, filling stations and a variety of other rural establishments, 35 per cent of rural population, or one person in every three, is now served with electricity. In New Hampshire, 70 per cent of the farms, in Rhode Island, Connecticut, New Jersey, Utah and California 60 per cent, and in Massachusetts 57 per cent of the farms are served from electric power lines. According to the U. S. Census of 1932, 15,527 out of a total of 16,598 incorporated towns and cities in the United States, or 94 per cent, were served by electricity. Private corporations served 13,772 of these communities. In addition, a rural non-farm population of 8,000,000 and a 2,000,000 farm population were served by private corporations.

It has as yet been uneconomic to extend electric service to the great majority of farms in the United States. This will continue to be the situation for many years to come. The cost of building lines to reach these farms is out of all proportion to the benefits to be derived by the farmer from the use of electricity. Considering the obstacles and the economic problems to be met, however, the electric light and power companies of America over the past fifteen years have made remarkable progress in carrying electricity to the farm, much more progress than any other country has made.

In Canada, a country of comparatively low population density and scattered farms, the percentage of rural electrification was 10 per cent, according to the 1931 report of the Dominion Bureau of the Census. In the Province of Ontario, where the density of farms is greater and rural electrification has been subsidized by the provincial government, 17 per cent of the farms were electrified. Across the line from Ontario, in Michigan, 22 per cent, and in New York State 36 per cent of the farms are electrified.

For Russia no statistics on farm electrification are available, but from unofficial sources it appears that rural electrification is practically non-existent.

No rural electrification figures are available for Japan, England or France. It is reported that 40 per cent of the farms in Sweden are electrified. In the somewhat comparable area of New Hampshire, 70 per cent of the farms are electrified and in New England as a whole 50 per cent are electrified.

Rural Electrification in Japan

Rural electrification in Japan has evidently made little progress. In the Annual Review Issue of the *Japan Advertiser* for 1934-1935, on page 13, occurs the following report on rural electrification:

"The rural depression in 1933 reduced the number of households provided with electric light. This was the first reduction ever recorded in Japan where hitherto the advance had been steady. However, even now more than 90 per cent of the households in Japan are provided with electric light." * * *

"Of course, in farm cottages and in the poorer districts of the country,

outlets are few. One bare globe hanging from the ceiling in the main room of the house is the standard for the vast majority of consumers." * * *

"In the six largest cities of Japan the gains have been more rapid. These six municipalities in 1927 contained 21 per cent of all the lamps in Japan. In 1933 this percentage had run to 34 per cent. In fact, outside of these six cities the entire country gained only 144,000 lamps between 1927 and 1933, graphic evidence of the strength of the rural depression, for there are more than 100 other cities in Japan with populations of 50,000 or more."

From the foregoing it is apparent that Japan is still far behind the United States in extent of electrification. General statistics on the use of electricity in Japan serve to confirm this statement. At the end of 1933, the latest available Japanese statistics, the total generating capacity in operation for electric light and power and for traction was 5,080,000 kilowatts with a total output of 17,000,000,000 kilowatthours. Comparable figures for the same year for the United States, as reported by the U. S. Geological Survey, were 36,038,000 kilowatts of installed capacity and an output of 85,402,000,000 kilowatthours. The United States, with a population not quite double that of Japan proper, had installed generating capacity seven times that of Japan and an annual output five times as great. The installed capacity per customer in the United States was three times the installed capacity per customer in Japan, and the kilowatthours produced per customer in the United States were two and a half times as great as in Japan.

Japan reports elaborate statistics on the number of installed lamps, showing a little over three lamps per customer. In the United States the annual sales of lamps alone amount to fourteen lamps per customer. The flat rate applicable for "night service" in Tokio for a 16 candlepower lamp (15 watts) is 55 sen per month. This is the most common lamp and the most common use for electricity in Japan. In addition to the lamp charge, there is a monthly rental on wiring and apparatus per lamp amounting to 5 sen per month up to 100 candlepower. Where the current is metered there is a meter rental for lighting service and for power service.

These figures plainly indicate that the principal use for electricity in homes throughout Japan is for a very limited amount of lighting.

Rural Electrification in France

There are no rural electrification statistics available for France. French statistics do not report the number of domestic customers nor do they show domestic consumption separately.

The farm population of France lives in villages and not in isolated farm houses scattered all over the land as in America, a fact which simplifies the expense of serving the rural customer. The French have been making rapid strides in bringing electricity to rural villages. In 1931, 91 per cent of the 38,000 communes in that country were reached by electric lines. As stated before, 94 per cent of the incorporated towns and cities in America are served by electricity and in addition some 8,000,000 customers living in unincorporated towns and villages are served with electricity.

The bringing of lines to these communes in France does not mean that all of the houses promptly take electric service. A review of public utilities abroad published in 1930 by Professor O. C. Hormell of Bowdoin College, quotes an estimate of 5,000,000 customers in France in 1927. This was 39 per cent of the homes of that country. According to published articles, the French peasants are slow in taking service and frugal in their use of it thereafter. It is used principally for a limited amount of lighting.

The Electrical Foreign Trade Notes of April 5, 1935, published by the U. S. Department of Commerce, show for the year 1931 a total of 7,620,000 electric customers in France, or one electric customer per 5.5 inhabitants. For the same year in the United States the total number of customers was 23,667,000, or one electric customer for each 5.3 inhabitants, and in the states of Ohio and Pennsylvania, which have about the same population density as France, there was one electric customer for each 4.5 inhabitants. Eighty per cent of all homes in these two states were served with electricity.

French statistics do not show domestic sales, but the total sales of electricity for commercial lighting and domestic use in France for the year 1933 were 1,650,000,000 kilowatthours. Domestic use alone for the same year in the United States was more than 7 times as great as this combined domestic and commercial lighting in France. Of course, the population of the United States is three times that of France, and the statistics are not strictly comparable because of differences in definitions, but these figures do indicate a much lower domestic use of electricity in France than in the United States. The total production of electricity in France in 1933 was 14,865,000,000 kilowatthours, which was 18 per cent or less than one-fifth the production of kilowatthours in the United States. On a per capita basis, the production of electricity in the United States in 1933 was nearly double that in France.

As an indication that the American housewife makes far greater use of electricity in the home than does the French housewife, in 1934 the magazine *Electrical Trading* reported that in France up to 1930 there had been sold 800,000 electric irons, 132,000 portable fires, 90,000 kettles and 43,000 small heating devices and cooking utensils. This indicates a saturation of about 7 per cent for electric irons as compared with 95 per cent saturation in the United States. The saturation of radios in France is apparently about 17 per cent as compared with 70 per cent in the United States. The number of water heaters was 26,000 as compared with some 300,000 in the United States. Although these statistics are very fragmentary, they plainly indicate that the use of electricity in France, either domestic or rural, has not begun to reach the scale of use that has been attained in the United States.

Rural Electrification in Great Britain

In Great Britain rural electrification is a comparatively recent development and is only getting under way. There are no figures available to show the number of farms served with electricity. On account of the population density, it would be relatively simple to reach all of the communities in that country. Because of the poverty of so many of the families, only 4,200,000 out of 12,000,000 homes in Great Britain were served with electricity in 1934, according to the estimate of Mr. J. M. Kennedy. In those homes which are electrified, substantial progress is now being made in introducing electrical appliances through pushing vigorously the rental-purchase plan and other sales programs, but the country as a whole is still far behind America in the use of electricity.

The estimated average use of electricity per domestic customer in Great

Britain in 1934, according to Mr. Kennedy, was 450 kilowatthours, as compared with 630 kilowatthours for the United States. In considering these figures, it must be remembered that in cities and towns of the United States practically 100 per cent of the families, rich and poor alike, have electric service, whereas in British communities only the more well-to-do part of the population is served. The American averages would be much higher if the small users were left out of the calculation.

Rural Electrification in Sweden

It is said that 40 per cent of the farms in Sweden are electrified. In territory of comparable density in the United States, 60 to 70 per cent of the farms are electrified. In an article entitled "The Mechanization of the Home" in the *Swedish-American Trade Journal* of July, 1933, the Secretary of the Swedish Electrical Manufacturers Association, in speaking of the use of electricity for pumping, for washing machines, ironing and dishwashing as important factors in reducing daily house work, made the remark: "This development is no doubt quite general the world over and is not confined to Sweden alone. On the contrary, *the United States has been the leader in this field and has contributed most to its development.*"

Rural Electrification in Ontario

The Administrator of the Rural Electrification Administration in Washington has pointed out that the provincial government in Ontario is offering free electricity over a period of years for the operation of washing machines, radios and pumps. For many years that government has donated half the cost of building farm lines and yet, according to the Dominion Census of Agriculture, at the end of 1931 only 17 per cent of the farms of Ontario were electrified, or less than half the percentage of farms with electric service in New York State.

Lack of progress in spite of repeated subsidies and continued liberalization of rates and charges points to the fact that the Hydro Commission has found rural electric service to be uneconomic and that it cannot be made to pay for itself as a going business concern.

The rural electrification policy of the Ontario Hydro Commission in certain respects is diametrically opposed to the announced rural policy of the TVA. The TVA has announced that it will sell electricity to the farmer at the same price that the city customer is to pay and has begun to put that policy in operation. In Ontario rural customers are charged much higher rates. They are divided into eleven classes and pay a monthly service charge which varies from $1.35 to $8.35 net, according to class. The service charge applicable to the class in which the average farm falls is $2.50 per month. This service charge alone, amounting to $30 per annum, without taking into account the energy charge which are also added, exceeds the total annual domestic bill of the average urban domestic customer in Ontario, which for the year 1934 was $26.

In Ontario, because of the relatively low cost of generating electricity as compared with the relatively high cost of fuels for cooking and water heating, a heavy use of electricity for these two purposes has developed in the urban territory by the more well to do customers who constitute about 27 per cent of the total. But aside from this use of electricity by one-fourth of the domestic customers, the other three-fourths of these customers do not use any more electricity than is used in the United States. In point of fact, the American housewife is better supplied with labor-saving devices than is the housewife in Ontario as indicated by the following table based on an article in the February 1935 issue of the *Hydro Bulletin* by Mr. G. J. Mickler of the staff of the Commission.

Per Cent "Saturation" of Various Household Electric Appliances

	—1933—	
	U.S.A.	*Ontario*
Flatirons	97.2	93.6
Vacuum Cleaners	47.2	26.6
Radios	72.0	58.5
Washing Machines	39.4	36.9
Toasters	40.9	44.1
Percolators	26.8	...
Ironers	3.9	1.3
Refrigerators	24.5	9.8
Oil Burners	3.9	2.8
Electric Ranges	5.3	26.6
Electric Grills	...	9.4
Electric Hot Plates	...	13.3
Portable Heaters	14.6	30.6
Electric Grates	...	4.7
Electric Water Heaters	1.3	11.6

Use of Electricity on the Farm

In discussing rural electrification, it is not enough to consider merely the number of farms reached by electric lines. Rural electrification only begins at this point. Recognizing this fact and, in order to build a sound foundation, the electric light and power industry, from the beginning of rural electrification some fifteen years ago, put forth intensive efforts to foster the development of machinery and of uses that would make electricity on the farm profitable to the farmer. It is not enough that it be convenient, but it must be profitable if the use of electricity by the average farmer is to survive. It is now used on farms for a great variety of purposes, depending on the type of farm served. Besides lighting the farm home and buildings, it is used to pump water, to grind feed, saw wood, grind tools, milk cows, cool milk, incubate chicks, heat soil beds, etc. At the present time the average farm east of the Rocky Mountains uses 830 kilowatthours per annum, and this amount is increasing rapidly as new uses are developed and electric machinery better adapted to farm purposes. In the far western states the average farm use is much higher than 830 kilowatthours because a considerable number of the farms use electricity for irrigation pumping. The average use per farm for that region is 5700 kilowatthours per annum.

Progress since 1920 in the uses made of electricity on the farm is by every fair standard of measure truly remarkable. No foreign developments on any broad scale can compare with what has been accomplished here. Individual electrified farms or small scale operations in other countries, of course, could be cited as examples, but as yet such electrification is not general. As is indicated in the foregoing discussion, the most common use of electricity by rural customers in Japan and in Europe is to light one or more lamps in the farmer's house.

State agricultural officials who have been wrestling with the rural electrification problem over a period of years have not been heard to say that America is backward in rural electrification. They are too well informed not to appreciate that the United States is well ahead of other countries in this field. This is true regarding domestic electric service in general.

Although no comprehensive statistics are available, it is entirely clear from published reports and articles that the American home is making much greater use of electric labor saving devices than is the case in the homes of any other country in the world. This is the case because of the skill and energy with which the electric light and power industry has extended the reach of power

lines and expanded the field of usefulness of electricity and also because of the relatively high earning power and high standards of living of the American people.

Further Progress

The most rapid increase in the number of farms served took place in the period from 1925 to 1930. The maximum year was 1928, during which 113,000 farm customers were added. The present rate of increase remains high, it was 42,000 for the twelve months ending August 31, 1935, notwithstanding the fact that each year the farm territory remaining to be served is still more lean; that is, the farms are farther apart or are not so well prepared to make use of electric service when it is made available. Even now some 20 per cent of the farms that have been reached by electric power lines do not take electric service because the farmer is not prepared to put it to use.

One of the more serious problems in rural electrification is the cost of electric wiring and of the electric machinery and appliances which the farm must have to use electric service after it has been made available. These costs run up into several hundred dollars and present a formidable obstacle, as can be appreciated in the light of the fact that, according to the 1930 Census, 53 per cent of the farms of America had farm dwellings valued at less than $1,000 and 42 per cent of the farms were tenant operated.

Cooperative plans now in operation and contemplated plans involving the Federal Government, the banks or other credit institutions, the public utilities and the sellers of electrical equipment are designed to assist the farmer to finance the cost of wiring his premises and help him to purchase needed equipment and appliances. These cooperative plans should provide a considerable impetus to increased rural electrification, not only from the standpoint of new power lines and inducement to farmers along existing lines to take service, but also increased use by existing farm customers. Some 30,000 farms were added during the first eight months of 1935 and it is reasonable to expect that the total for the year will be somewhere between 40,000 and 50,000. For the reasons just given, the increase in number of farm customers in 1936 and 1937 should be even greater than the increase in 1935. There seems little possibility, therefore, at least for many years to come, of America becoming a backward nation in rural electrification.

Young and Cortelyou to Head Educational Movement to Honor Thomas A. Edison

WILLIAM S. BARSTOW, President of The Thomas Alva Edison Foundation, has announced that Owen D. Young will serve as National Chairman, and George B. Cortelyou as National Vice-Chairman, of the country-wide movement to honor Thomas Alva Edison by the establishment of a program to keep alive the ideals of the Wizard of Menlo Park.

The Edison Center for the Advancement of Youth in Science will comprise the physical setting from which a wide educational program will be developed with emphasis on the encouragement of youth in the pursuit of scientific knowledge, to be an ever-living memorial in keeping with Edison's lifelong services to mankind, and particularly to youth.

The basic memorial will include facilities for the permanent care of Edison's personal library, which is probably one of the most valuable scientific libraries in existence, his records and papers, and originals or replicas of each of the more than one thousand inventions which he developed. The plans also include provision for a final resting place for the great inventor. Menlo Park, the scene of Edison's early activities, will be marked by a simple and impressive shaft, as a part of the general memorial program.

Officers of The Thomas Alva Edison Foundation are: William S. Barstow, President; William H. Meadowcraft, Honorary Vice-President; Lester W. W. Morrow and Frederick A. Scheffler, Vice-Presidents; and Walter S. Mallory, Secretary and Treasurer. These, with Dr. A. E. Kennelley, Howel H. Barnes, Jr., William J. Orchard, Dr. Charles F. Scott, Dr. Clayton H. Sharp, William H. Taylor, Preston B. Millar and Arthur Walsh, comprise the Board of Directors.

Opening night at the NBC studio when the first in a series of Sunday evening programs, known as "Echoes of New York Town," was broadcast beginning at 6:30 over WEAF. The series is sponsored by the gas and electric companies affiliated with the Consolidated Gas Company. In the first row are Former Governor Alfred E. Smith, Mrs. Alfred E. Smith, Floyd L. Carlisle, chairman of the board of Consoldiated Gas, and Frank W. Smith, president of Consolidated Gas.

Public Utility Act of 1935 Declared Invalid in U. S. District Court

THE Public Utility Act of 1935 has been held to be invalid by Judge William C. Coleman, U. S. Federal District Judge for the District of Maryland. His opinion, in the case of the American States Public Service Company, was filed on November 7, Judge Coleman taking the position that Congress had "flagrantly exceeded its lawful power" under the Constitution in enacting the measure.

The new law was assailed on four main grounds by Judge Coleman who described it as "grossly arbitrary, unreasonable and capricious" and of such nature that it was impossible to separate from the invalid sections and put into effect such parts of the act, "if any, as otherwise might be valid."

Judge Coleman's summary of his 92-page opinion holding the act unconstitutional follows:

1. The question as to the validity of the public utility act has been directly and properly raised. There has been no collusion between the parties. There is a real and not fabricated conflict of parties and interests. There is nothing premature about the proceeding. On the contrary, there is an actual, pressing need for a prompt ruling upon the act's validity, because of the fast-approaching date when the act, with its multifarious, drastic requirements, becomes effective; and because until such ruling is had, it cannot be determined whether the pending reorganization proceedings are a futility, or should be progressed to a conclusion, as this court has directed.

2. The public utility act is invalid in its entirety for the following reasons:

A. Congress by its enactment has flagrantly exceeded its lawful power under the commerce clause of the Constitution in that the provisions of the act are, neither by their express language nor by any reasonable implication, capable of being restricted to the regulation of public utility holding companies and their subsidiaries or affiliates, when engaged in interstate commerce or in transactions that directly affect or burden interstate commerce. The act aims to regulate virtually everything that such companies do, intrastate as well as interstate. All of the companies before the court are embraced within the act's provisions, although none of them does any interstate business, or is engaged in any intrastate business that directly affects or burdens interstate business.

The theory upon which the act is predicated is that public utility holding companies and their subsidiaries are affected with a "national public interest." But under the Constitution there is no "national public interest" which permits of Federal regulation, unless the person, corporation or thing affected with such interest is, in fact, involved directly, not indirectly, in some activity over which the Federal government, through one or more of the powers delegated to it by the Constitution, has jurisdiction. If the Constitution be construed to permit what the public utility act aims to accomplish, then Federal authority would embrace practically all the activities of the people, and the authority of the states over their domestic concerns would exist only by sufferance of the Federal goverment.

B. Congress, by its enactment, has exceeded its lawful authority under the postal power granted to Congress by the Constitution, in that the act arbitrarily and unreasonably denies completely the use of the mails to all persons and corporations embraced within the act with respect to all of their activities, as a penalty for non-compliance and a means of compelling compliance with the act's requirements, regardless of whether any particular use of the mails for any particular thing mailed is in fact of such character as reasonably to warrant exclusion. That is, the exclusion bears no relation necessarily to the use itself but to the user of the mails.

C. Congress, by its enactment, has flagrantly violated the requirements of due process of law under the Fifth Amendment to the Constitution in that many of the act's provisions are grossly arbitrary, unreasonable and capricious, because of the penalties which they impose for non-registration with the Securities and Exchange Commission; the restraints upon the issuance and acquisition of securities, etc.; the regulations and prohibitions with respect to service, sales and construction contracts; the taking over of virtually the entire management of the affairs of the companies embraced by the act; and the elimination or simplification of holding company systems.

D. The invalid provisions of the act, in spite of its separability clause, are so multifarious and so intimately and repeatedly interwoven throughout the act as to render them incapable of separation from such parts of the act, if any, as otherwise might be valid. The court cannot rewrite the statute and give it an effect altogether different from that necessarily produced by its provisions viewed as a whole. Invalid parts of a law may be dropped only if what is retained is fully operative as a law. In the public utility act, invalid provisions are the rule, rather than the exception. If dissection is attempted, scarcely a clause survives, save, perhaps, the preamble.

3. The question whether Congress, by the act, has also unlawfully delegated to the Securities and Exchange Commission, without establishing adequate and intelligent standards to guide and assist it, the legislative power to determine when and to what persons and corporations the act shall apply, has not been considered by the court, because unnecessary in view of the other grounds upon which the court rests its decision.

* * *

Briefly, the American States Public Service Company had filed proceedings for reorganization under the Federal bankruptcy act more than a year ago and trustees were appointed. The trustees contended that compliance with the provisions of the act would make suitable plans for reorganization virtually impossible. Several plans for the reorganization were pending before Judge Coleman, and the trustees asked him for a ruling as to whether they should register with the Securities and Exchange Commission, as required by the 1935 act. In opposing the advisability of such registration the trustees questioned the constitutionality of the act.

John W. Davis entered the case as counsel for an intervening creditor, Dr. Ferd Lautenbach, Baltimore dentist and bond holder in the company. Burco, Inc., entered the case as an intervenor opposing the contention of the trustees.

During hearings on the case John J. Burns, former Superior Court Judge of Massachusetts and now chief counsel for the Securities and Exchange Commission, filed a brief in which he charged collusion in order to obtain an opinion on the constitutionality of the act.

Of the Government's charges, Judge Coleman said in his opinion:

"It is not forbidden 'collusion' for the parties to a case, by agreement, to put it in such shape that the rights and obligations of the parties can be the more readily determined by the court, especially when matters of public moment are involved requiring speedy settlement, regardless of an adverse effect upon the Government's interests. . . . What has just been said applies equally to the status of the other intervening creditor, Ferd Lautenbach, and his counsel. The attempt on the part of counsel for the Government and for the Securities and Exchange Commission to disparage the motives of both intervenors and their counsel is not only baseless, but unworthy of any representative of any branch of our Government, and an unwarranted reflection upon the trustees, officers of this court, appointed in this proceeding."

Current Utility Problems

By Bernard F. Weadock

Vice-President and Managing Director, Edison Electric Institute

An address before the Convention of the Indiana Electric Association, held at Purdue University, Lafayette, Indiana, November 7, 1935

THE public seems to be of the opinion that the electric light and power companies alone constitute the electrical industry and that the only things at stake during the present turmoil are the earnings of a few holding companies. There are far more people and institutions involved than that. The electrical manufacturers, electrical dealers, electrical contractors, the three to five million electric investors are as essential to the completion of the picture of the industry as are the 25 million customers. Few realize the investment in plant, equipment and appliances of the manufacturers, dealers, contractors and consumers. A conservative figure for the combined investment of these people and the electric light and power companies is $25 billion, the different branches of the industry employ a personnel of 600,000 people, and when we accept government figures for dependence upon persons so employed, we arrive at a total of at least two and a half million people depending upon the success and continued expansion of the industry for their livelihood. All of these people are affected by the attacks of the government just as certainly and as directly as are the investors in utility securities.

Nothing is possible without capital. The investors in the industry have directly and indirectly made the electrical industry possible. The securities of the industry help constitute the assets behind almost 33 million insurance policies and secure in a goodly measure over 39 million depositors in savings banks throughout the nation, while the same securities are the bulwark of many endowment funds of educational, charitable and eleemosynary institutions. When it is remembered that the endowment funds of the institutions of higher learning in the United States now exceed $1,400,000,000, the stake that the colleges have in the integrity of their utility investments is evident.

It is my thought today to speak of the operating electric light and power companies which constitute but a portion of the electrical industry. In 1933 there were 1681 private operating companies of record in the electric light and power business. Of these, 1601, or 97½ per cent of the total, had a net income of less than $60,000 in 1933. The companies engage a personnel of over 250,000 people who constitute a peaceful army ready day and night to serve the people intelligently, efficiently, honestly and fairly. No one can quarrel with the obligations that this army and these companies owe their public. Briefly, they are: first, adequate and efficient service at all times; second, that the rates for such service be reasonable and fair; and third, that its financing be conservative and honest.

It must be remembered that the electric light and power companies were created to supply a new and romantic service to the people. Today, after about fifty years of growth, romance has been superseded by actualities. Electricity remains and perhaps will always remain a matter more or less of mystery, but its accomplishments are self-evident. I want you to inquire into the facts surrounding the building of this great industry and see whether the central stations have fulfilled their duty to the public. No one questions that as to service the utilities far excel any other industry known to the world. It has been extended to practically every hamlet and village. It is available upon nearly 800,000 farms. This extension of service has not been compulsory; it has been voluntary and, as you know, has been extended in advance of the immediate need for it.

As to domestic rates, public records are proof of their constant reduction. They have been reduced annually from 3½ to about 5 per cent. The domestic rate for electric service has gone down over 40 per cent since 1924, while the cost of living throughout the United States has gone up over 40 per cent since 1924.

Much criticism has been directed at utility financing. Again the record should silence such talk. The utilities of which I speak have assets of $1.13 for each dollar of outstanding securities. If this is not sufficient proof of the soundness of the financing, let me call your attention to the fact that less than 1 per cent of operating company bonds are now in default and that less than 10 per cent of preferred stocks were at any time in default at even the lowest point of the depression and this accomplishment is despite the continued, unjustified assault upon the business.

We do not have statistics upon the status of holding company finances. It is safe to say, however, that there has been sound financing and also some unsound financing. On the whole, it is my belief from experience and study that the financing of the holding company in the electric field has been just as sound and honest as that of the good holding company in other industrial lines. In fact, a high official of the Federal Trade Commission, speaking of "watered stocks" in the utility industry, said: "The utilities were pikers compared with some industries I know." This expression, however, never appeared in the official proceedings of the Federal Trade Commission.

With the record of accomplishments of the industry so well known, I am wondering if we are not entitled to greater credit for what we have done than we receive. Things appear jittery, dubious and uncertain, but are they so in fact? I do not believe it. It seems as if we are in the midst of a hurricane of socialistic thought more destructive of American institutions than we have had the courage to recognize, encounter and defeat. We pause in our amazement; we seem lost in the haze of the fury of the destruction which seems to abound and which is directed not at us alone, but at the established American system of economic and legislative stability. Can an abundant life and social security come by the abolition of private business for profit and the substitution for that system of one based on fancifully spun theories, perforated by unsuccessful try-outs throughout the nations of the world? This industry has been chosen as the first objective of a spearhead attack for State Socialism. This

industry for years has borne the attack of an "unholy alliance" composed of certain persons and organizations, whose own published documents declare themselves in favor of the abolition of *all* private business for profit and the substitution therefor of an economic, industrial and legal regimentation, socialism and complete demolishment of the profit system in all businesses. These organizations are:

League for Industrial Democracy
Public Ownership League of America
National Popular Government League
The Peoples Legislative Service
The Socialist Party

Many people, including public officials, editors and publicists, have recognized the preachments of these people as authentic without fairly appraising their source or intentions, and this in part because the industry has remained silent and has not adequately defended itself against such attacks, and I might say that a full opportunity to do so has been denied the industry.

America has been builded upon the genius of its manhood, which has sought not only success in its labor, but an honest compensation or reward for its effort. There is nothing in the Constitution of the United States nor in any law of God or man which makes it unlawful, disgraceful, or sinful to work at an honorable calling for suitable reward. This industry today stands in the anteroom of the death chamber awaiting execution because these certain few people and organizations have been successful in spreading their themes and theories of a specious Utopia throughout the land. To those who hold that belief honestly, my suggestion is that they go where those experiments flourish, but the results of which have brought neither respectability, prosperity nor stability to the respective countries adopting them. Those of that group who have sought the advancement of their cause have repeatedly and constantly made this industry the object of their attack, because, in their own words, they say: "If superpower cannot be socialized, and that promptly, the whole cause of industrial democracy will be indefinitely delayed."

This "unholy alliance" has been more successful in its attempts to impair, and destroy if possible, this industry than most people believe. They are the framers of the indictments against the industry. It is that indictment, so systematically and thoroughly propagandized, that has brought most of the troubles to this industry. I am willing to take the charges contained in their false indictment to the people of the country in any forum of equity or before a jury of fair-minded American citizens and guarantee an acquittal on most, if not all, of them. I am certain that they would not be as successful in defending my true indictment against the Federal Government's program which was advocated by them and adopted by the government largely through their efforts.

Let me call your attention to the fact that all industry will suffer from the false philosophy of those who would ruin this business because, while the gun is now pointed at us, the fire is intended for all American business operating in America under the established American system of the profit motive. The Congressional Record, reporting the debates on the Wheeler-Rayburn Bill, records many instances where those participating in the debate stated that all holding companies in all fields of industry should be eliminated and prohibited. I quote several who made such pronouncements:

Senator Wheeler of Montana:

"I think this (the passage of the Utilities Bill in the Senate) means the end of all holding companies generally. . . . I say that the holding company has no place in our economic life. It is a detriment, and if we permit it to continue it will wreck the country. . . . In addition to what the Senator from Kentucky has said, permit me to state that many Members of the Senate thought we ought to have gone much further than we did go, and eliminate all holding companies."

Senator Black of Alabama:

"If the holding company system is bad with reference to the control of electric power, it is bad with reference to the control of other business. . . . I am against the holding company system, whether in power, railroads, telephones, aviation, shipping, or any other business. . . . I intend to offer an amendment to the shipping bill to prohibit holding companies. . . . I want it distinctly understood that I am not referring simply to holding companies in the power business. . . ."

The late Senator Long of Louisiana:

"Mr. President, the quarrel I have with the bill is that it did not stick to the original policy of eliminating all holding companies. What is the difference between holding companies, regardless of where they are? So far as I am concerned, they all ought to be eliminated."

Senator Barkley of Kentucky:

"It is a very serious question whether some day the holding company must not be abandoned as an ailment of American business in all lines. But we cannot do that in one measure, and therefore we ought not to hesitate to do our duty with respect to the situation covered by the pending bill and wait a more convenient season for dealing with the others."

Senator Bone of Washington:

"The holding company, with its present powers, has been an instrument and a symbol of imperial oppression in the great operating industry and has utterly failed to serve the public interest in any way, shape, or form. . . ."

Senator Norris of Nebraska:

"In my opinion, holding companies constitute the greatest evil of our civilized age. . . ."

Thomas G. Corcoran (one of the drafters of the bill):

"If we could look things straight in the eye for the purpose of preserving our economic democracy, we would have to break up these systems, no matter what the cost was. This is just exactly what the President was referring to in his holding-company message. You remember that the particular point of that holding-company message was that this was a beginning, in an industry that was particularly public, and in an industry that had particular significance for the public—a beginning of an attempt to handle the problem of concentration of economic power and wealth, which is the outstanding problem facing the continuation of a democratic form of government and a democratic form of economic organization in this country."

That this theory of abolition of American corporate life saturates almost every corner of the capital city may be due to the acceptance of the philosophy of the group General Johnson calls "The Harvard Crowd," or the "Happy Hot Dogs," after the name of their leader, who has been affiliated with the "unholy alliance." The proof of this may be found in the picturesque language of General Hugh S. Johnson, who, from personal knowledge of the group and their backstage gestures, makes the following statement:

"His 'boys' have been insinuated into obscure but key positions in every vital department—wardens of the marches, inconspicuous but powerful. Wherever to know, check, influence or control what goes on in Government it would be a good thing for a Big Happy Hot Dog to have a Little Happy Hot Dog planted, there is one there, alert and quietly active.

"In the early days they held obscure juntas in imitation salons, and here much that has developed since to worry and harass and repel business was discussed.

"Two or three infest Henry Wallace. The area in and about the Federal Trade Commission literally writhes with them. The Justice, Interior, Labor and Treasury Departments harbor their quotas. Other hosts for them are PWA, AAA, FERA, TVA and SEC.

"They have had a guiding hand in the

drafting of nearly all legislation except NRA, from which they were excluded, with difficulty, by a tour de force.

"To them the Constitution is just a foil for clever fencing—an antediluvian joke to be respected in public like a Sacred Cow and regarded in private somewhat as Gertrude Stein probably regards the poet Tennyson, or any other Victorian.

"Their idea is that government is the nucleus of a vast collectivism in which business or any private enterprise are just elements to be absorbed. . . .

"Their thought here was that the Supreme Court and the Constitution could be put on the spot as a scapegoat in the public eye, and Government could thus move by a short cut to collectivism. They recognize that as a blunder now, but they were very positive then.

"The presence and the obvious influence of such a group is an intimidation to administrators and legislators alike. The knowledge of these powers colors all legislation and action.

". . . almost none of the complex and massive affairs of this Government has been entrusted to men of affairs, but rather to starry-eyed or fiery-eyed idealists, wholly acceptable to this group in both personality and action, and, with few exceptions, utterly unsuited to effective administration.

". . . Now, this is *not* government on the American plan. These pundits represent nobody and nothing but their own 'advanced' ideas. Nor do they ever put *themselves* in any exposed position of personal responsibility. They are borers from within. The idea seems to be that they are 'acceptable to liberals.'"

One of the "High Command" in the New Deal, Hon. Harold L. Ickes, has said:

"The New Deal is not afraid to follow through to the inevitable conclusion that if private capital will not perform its functions, public capital must and will."

Who shall constitute the tribunal to define what these functions are and to determine whether private capital has performed its functions? I submit that before we increase our overwhelming tax burden, that we weigh the question openly, fairly and honestly as to whether private capital has not on the whole functioned well and brought gifts and accomplishments to this nation that are not enjoyed in others. For instance, the average domestic ratepayer now pays 9c a day for electricity, while the same man pays $1 a day for taxes. One-third of the income of the American worker now goes to pay direct and hidden taxes in one form or another. Authorities say that there are 53 different kinds of taxes concealed in a single loaf of bread. If those who seek a determination of the question of the expediency of private or public expenditures are such business geniuses, why isn't it possible to reduce the tremendous tax burden that every man, woman and child in the nation must pay?

Instead of an indictment against this industry, the indictment should run against the Federal Government for its unlawful, unconstitutional and mischievous interference with an honest business well conducted. A few of such acts are as follows:

1—It denies the electric light and power companies the full protection of the Federal Courts universally enjoyed by all other citizens of the United States.

2—It exacts a 3 per cent tax applied to the privately owned companies alone and its provisions specifically exclude municipal and publicly owned plants.

3—Through the Federal Trade Commission it has conducted an ex parte investigation and has shown reflected in the mirror only that which it considered bad enough to constitute propaganda for the Wheeler-Rayburn Bill.

4—The opponents of this industry are extremely generous in the use of such picturesque terms as "syphoning profits," "gouging the operating companies," etc., but I can tell you that from an examination of the records that the Government last year "gouged" these operating companies in taxes $43 million more than all the holding companies combined received from all the operating companies either in the way of compensation for services rendered, interest on their investment, or dividends from their stocks.

5—It has engaged in competition by the construction of wasteful, unnecessary and unjustifiable power projects throughout the country at a cost of 3 billions of dollars and if they carry out their present plan, it will involve an additional 3 billions of dollars, making a total of almost one-third of the money the utilities have invested in the business. These same include TVA, Boulder Dam, Bonneville and others.

6—It has taken $200,000 from the "Work Relief Fund" to carry on the rate power survey of the Federal Power Commission.

7—It has formed corporations to compete with electrical dealers and contractors throughout the country.

8—It has given by loan and grant upward of $57 million to 190 towns and cities to build municipal plants. It has flown government airplanes throughout the country soliciting municipalities to accept Federal money to build competing electric light and power plants, offering 45 per cent of the cost gratis and a liberal loan for the remaining 55 per cent. This is true, regardless of the cordial relations existing between the company, the town and its customers, and also regardless of the rates charged for that service. These government solicitors demand that the private company cut its rates 20 per cent below those existing, no matter whether such rates are fair and reasonable or not. If the company will succumb to this governmental threat of the "big stick" and grant new rates satisfactory to the PWA, the proposed gift and loan will be immediately withdrawn from the municipalities; thus constituting the PWA as the rate fixing body of each state or city in the Union and destroying the state policy for regulation of an intrastate business. Why such favoritism to the consumers of the private plants? The official rate survey of the Federal Power Commission shows the fact to be that the small consumer of the average municipal plant in the United States has to pay at least 8c per kilowatthour for his service. This same survey shows that in Montana, Senator Wheeler's own state, the municipal plants charge the ordinary customer 15c per kilowatthour; in Nebraska, Senator Norris' own state, 10c per kilowatthour; in New York, where there is considerable agitation and where the Power Authority stated that the cost should not exceed 3½c, the municipal plants average 7c per kilowatthour for all ordinary uses.

9—It has instituted the Black Investigation Committee to further intimidate and coerce the industry into subjection to the will of those who would destroy it. That Committee would deny to the utilities their constitutional right as contained in the First Amendment of the Constitution, which reads that "Congress shall make no law . . . abridging . . . the right of the people peaceably to assemble and to petition the government for a redress of grievances." The right to petition the Government is as ancient as Magna Charta and has been hitherto the main support of the freedom of a free people. It is to be hoped that the people of this country will never be denied their inalienable right to petition the government for redress of grievances. This Committee likewise disregards another equally fundamental right, to wit: the Fourth Amendment of the Constitution, which reads: "The right of the people to be secure in their persons, houses, papers and effects against unreasonable searches and seizures shall not be violated. . . ." The Committee apparently assumes that the resolution of the Senate creating it supersedes the constitutional provisions that I have quoted and consequently the Committee and its agents are on an extended "fishing expedition" throughout the United States. It is to be hoped that a proper opportunity may present itself to have legally determined the question of whether a mere resolution supersedes the Constitution of the United States, and, whether American citizens are to be subjected to continued public humiliation and the destruction of their constitutional rights of person and property by those sworn to protect them.

10—In the Wheeler-Rayburn Bill they have reached the ultimate. The Act deprives the people of the efficient and progressive management of these properties as shown by the acid test of performance and substitutes therefor a distant governmental management whose standards of efficiency shall be the whim, caprice and will of the ever-changing personnel of the two bureaus charged with the administration of the Act. It is an attempt to so weaken the smaller operating companies in securing essential financing, engineering, accounting and construction services as to render such operating companies more vulnerable to the attack of the professional advocates of government and political ownership. It excludes from its provisions all government or publicly owned plants, thus legalizing and perpetuating the unfair competition of such

agencies against private owners. The Act denies the use of the mails to those who do not comply with the law. It imposes a fine of $200,000—the highest fine on record—for failure to comply. It will break up and destroy the holding company, this despite a report of one of the Government Commissions that holding companies serve a necessary, useful and economic purpose. They would by these things so increase the cost of doing business that the progressive rate reductions must likely end. We have heard much of the volume of electricity passing over state lines. Some estimates run as high as 17 per cent. The fact is that the total money value of the interstate power at present unregulated amounts only to about $4,000,000 a year, most of which interstate business results from the mere accident of the geographical location of the plants. The Federal bureaus who are to have jurisdiction under the Public Utility Act of 1935 have initially asked for approximately one-half of this amount for administration costs.

Many more counts could be included in the indictment, but time will not permit discussion of them today.

The Board of Trustees of the Edison Electric Institute has retained the services of the Honorable John W. Davis of New York, the Honorable Newton D. Baker of Cleveland, Ohio, and the Honorable James M. Beck of Washington, D. C., to defend the industry against the unconstitutional acts of the Federal Government in connection with the Wheeler-Rayburn Bill, the Tennessee Valley Authority and the P.W.A. gifts and loans by the Federal Government for municipal and government ownership. This action brought an unjust attack by public officials in Washington and many of the group who for some reason do not want to have their abuses of authority tested in accordance with the law of the land. They desire that their conduct as public servants may not and shall not be legally questioned in the courts of the land.

The industry has seen darker days. Its courage, tenacity and foresight have brought it from those dark days into the sunlight of success and prosperity. What it has done once, it can do again. In concluding, I can do no better than to say that this industry as a whole must work together in the tremendous constructive job ahead. The message I would leave with you is not my own. It is from Mr. Thomas A. Edison, the father of the industry, who, in 1931, said:

"My message to you is be courageous. I have lived a long time. I have seen history repeat itself again and again. I have seen many depressions in business. Always America has come out stronger and more prosperous. Be as brave as your fathers before you; have faith; go forward."

ELECTRIC REFRIGERATOR SALES

(Household Models Only)

MONTH OF SEPTEMBER AND FIRST NINE MONTHS OF 1935—1934

	Month of September 1935	Month of September 1934	Month of August 1935	First Nine Months 1935	First Nine Months 1934
Total United States	*53,622*	*39,149*	*110,161*	*1,423,483*	*1,242,764*
Maine	207	343	467	7,380	6,498
New Hampshire	263	247	296	5,335	4,449
Vermont	118	151	204	3,312	2,600
Massachusetts	2,669	2,317	5,174	57,502	48,370
Rhode Island	347	184	693	7,373	7,122
Connecticut	1,075	766	2,909	22,453	17,251
Total New England	4,679	4,008	9,743	103,355	86,290
New York	12,628	8,942	21,426	165,400	165,455
New Jersey	2,634	2,306	4,436	59,526	54,375
Pennsylvania	3,760	2,712	7,702	108,495	112,852
Total Middle Atlantic	19,022	13,960	33,564	333,421	332,682
Ohio	2,967	1,931	6,032	93,114	84,107
Indiana	857	429	2,620	35,740	32,057
Illinois	2,358	2,400	8,370	141,063	89,281
Michigan	1,824	915	5,833	58,376	47,593
Wisconsin	547	349	2,752	24,183	19,810
Total East No. Central	8,553	6,024	25,607	352,476	272,848
Minnesota	704	334	200	20,165	16,365
Iowa	342	278	1,844	23,603	19,484
Missouri	1,174	1,522	1,971	42,465	49,418
North Dakota	62	50	262	3,887	2,993
South Dakota	69	55	299	4,902	3,919
Nebraska	233	141	760	15,574	13,930
Kansas	249	270	969	18,205	19,546
Total West No. Central	2,833	2,650	6,305	128,801	125,655
Delaware	101	55	66	2,979	2,828
Maryland	596	756	1,326	20,193	23,719
District of Columbia	467	181	623	10,946	11,735
Virginia	552	399	744	20,515	20,504
West Virginia	329	155	846	15,008	17,159
North Carolina	316	264	452	24,349	19,689
South Carolina	265	183	523	12,185	9,193
Georgia	725	691	1,888	26,679	28,544
Florida	1,645	1,575	2,377	21,428	13,404
Total South Atlantic	4,996	4,259	8,845	154,282	146,775
Kentucky	435	291	1,085	16,282	18,493
Tennessee	893	277	1,443	23,710	25,946
Alabama	415	521	879	21,061	16,285
Mississippi	167	92	567	7,022	4,919
Total East So. Central	1,910	1,181	3,974	68,075	65,643
Arkansas	203	273	701	9,882	8,685
Louisiana	430	245	758	13,607	9,197
Oklahoma	181	229	580	16,209	17,168
Texas	1,640	1,712	3,795	59,169	50,340
Total West So. Central	2,454	2,459	5,834	98,867	85,390
Montana	208	78	516	6,136	4,943
Idaho	176	133	421	6,849	4,169
Wyoming	62	42	141	2,408	2,130
Colorado	171	194	590	11,169	10,084
New Mexico	48	15	(57)	3,145	2,351
Arizona	125	47	181	5,455	3,358
Utah	176	131	345	7,131	5,697
Nevada	51	57	131	1,793	1,159
Total Mountain	1,017	697	2,268	44,086	33,891
Washington	1,120	241	1,770	20,671	17,404
Oregon	529	198	726	13,892	14,581
California	6,509	3,472	11,525	105,557	61,605
Total Pacific	8,158	3,911	14,021	140,120	93,590

Figures based on Report issued by the National Electric Manufacturers Association.

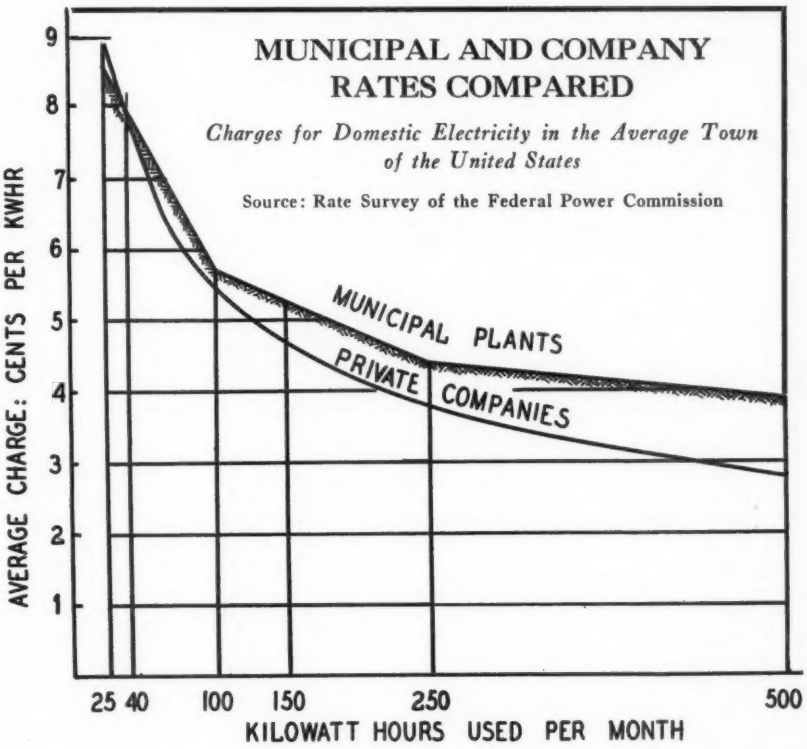
Utility Company Electric Rates

Analysis of Recent Reports of Federal Power Commission Compares Private Companies on Same Basis as Municipal Plants—Consumer in Average Town Obtains Service More Cheaply from Companies for All But Smallest Quantities of Use—Companies Offer Better Promotional Rates

By William M. Carpenter
Economist, Edison Electric Institute

IN last month's BULLETIN there was presented an analysis of the rates charged for domestic electric service by the typical municipal plant, based upon a summary of the communities listed in the Rate Survey of the Federal Power Commission.

As a companion to that study, there is shown on the following pages a similar table, prepared in the identical manner, giving the figures for the private companies listed in the same Rate Survey. A comparison of the two tables, condensed by geographic divisions of the United States, is shown below as Table I and the net result, expressed as the average for the entire country, is illustrated graphically on the adjoining chart. This latter epitomizes the political nature of rate-making as at present maintained by most of the municipal plants of America.



Municipal and Company Averages Compared

It is increasingly evident that where comparisons are based upon a large number of towns which are similar in size, geographical location and economic characteristics, the much - advertised

TABLE I—CHARGES FOR ELECTRICITY IN AVERAGE TOWNS SUPPLIED BY MUNICIPAL PLANTS AND UTILITY COMPANIES

U. S. Census Geographic Division	Number of Places Supplied		Average Charge in Cents per Kilowatt Hour											
			Kilowatt Hours Used per Month											
	by Mun'l.	by Co.'s	25		40		100		150		250		500	
			Mun.	Co.	Mun.	Co.	Mun.	Co.	Mun.	Co.	Mun.	Co.	Mun.	Co.
Entire United States	1,742	16,007	8.60	8.92	8.03	8.00	5.73	5.47	5.28	4.73	4.40	3.75	3.90	2.80
New England	82	1,343	7.3	9.5	6.8	8.3	4.8	5.7	4.4	4.9	3.8	3.9	3.4	3.0
Middle Atlantic	97	2,172	7.4	8.6	7.0	7.7	5.5	5.4	5.0	4.7	4.4	3.8	3.9	2.9
East North Central	374	3,365	7.2	8.0	6.8	7.3	5.1	5.1	4.7	4.4	4.0	3.6	3.6	2.6
West North Central	611	2,667	9.3	9.8	8.7	8.8	6.3	5.8	5.8	5.0	4.9	4.0	4.5	3.1
South Atlantic	206	1,923	9.4	8.4	8.7	7.6	5.8	5.3	5.4	4.6	4.3	3.7	3.7	2.7
East South Central	74	1,195	7.4	8.3	6.9	7.4	4.7	5.1	4.2	4.4	3.3	3.5	2.6	2.6
West South Central	138	1,728	9.9	10.6	9.4	9.3	6.4	6.1	5.9	5.1	4.9	3.9	4.3	2.9
Mountain	106	816	10.2	10.3	9.4	9.4	6.3	5.9	5.8	5.3	4.6	4.1	4.1	3.3
Pacific	54	798	6.1	7.3	5.6	6.7	4.0	5.0	3.5	4.6	2.8	3.3	2.1	2.3

TABLE II—UTILITY COMPANY ELECTRIC RATES IN THE UNITED STATES

Residential Electric Rates in Effect January 1, 1935 **Average by States and Geographic Divisions**

(From data in Federal Power Commission, Electric Rate Survey—State Reports, 1935)

STATE	Number of Communities	Average Net Monthly Bill — Kilowatt-Hours Per Month						Average Charge Per Kilowatt-Hour — Kilowatt-Hours Per Month					
		25	40	100	150	250	500	25	40	100	150	250	500
New England													
Maine	390	2.44	3.50	5.80	7.45	9.53	14.16	9.76	8.75	5.80	4.97	3.81	2.83
New Hampshire	212	2.47	3.43	5.75	7.07	9.48	15.25	9.88	8.58	5.75	4.71	3.79	3.05
Vermont	210	2.43	3.47	5.59	7.15	9.77	14.59	9.72	8.68	5.59	4.77	3.91	2.92
Massachusetts	306	2.24	3.19	5.72	7.44	10.39	16.06	8.96	7.98	5.72	4.96	4.16	3.21
Rhode Island	41	2.19	3.21	6.15	7.86	10.92	17.02	8.76	8.03	6.15	5.24	4.37	3.40
Connecticut	184	2.29	2.97	5.47	7.24	9.76	13.80	9.16	7.43	5.47	4.83	3.90	2.76
Total	1,343	2.37	3.33	5.71	7.32	9.82	14.86	9.48	8.33	5.71	4.88	3.93	2.97
Middle Atlantic													
New York	725	2.22	3.13	5.55	7.34	10.32	16.28	8.88	7.83	5.55	4.89	4.13	3.26
New Jersey	512	2.32	3.43	5.61	7.17	9.99	13.61	9.28	8.58	5.61	4.78	4.00	2.72
Pennsylvania	935	2.00	2.78	5.07	6.72	8.68	13.31	8.00	6.95	5.07	4.48	3.47	2.66
Total	2,172	2.15	3.06	5.36	7.04	9.54	14.37	8.60	7.65	5.36	4.69	3.82	2.87
East North Central													
Ohio	794	1.90	2.77	5.16	6.86	9.74	14.92	7.60	6.93	5.16	4.57	3.90	2.98
Indiana	613	2.02	2.91	5.17	6.72	9.38	15.38	8.08	7.28	5.17	4.48	3.75	3.08
Illinois	976	2.03	3.08	5.35	6.77	8.61	11.72	8.12	7.70	5.35	4.51	3.44	2.34
Michigan	483	1.89	2.50	4.17	5.37	7.66	11.30	7.56	6.25	4.17	3.58	3.06	2.26
Wisconsin	499	2.29	3.19	5.33	6.73	9.14	12.51	9.16	7.98	5.33	4.49	3.66	2.50
Total	3,365	2.01	2.91	5.10	6.57	8.96	13.09	8.04	7.28	5.10	4.38	3.58	2.62
West North Central													
Minnesota	436	2.37	3.40	5.43	6.92	9.38	13.67	9.48	8.50	5.43	4.61	3.75	2.73
Iowa	642	2.37	3.41	5.70	7.41	10.01	15.75	9.48	8.53	5.70	4.94	4.00	3.15
Missouri	520	2.40	3.49	5.88	7.66	10.04	15.91	9.60	8.73	5.88	5.11	4.02	3.18
North Dakota	240	2.70	3.93	5.39	7.11	9.19	13.05	10.80	9.83	5.39	4.74	3.68	2.16
South Dakota	178	2.84	3.99	5.83	7.72	10.33	15.76	11.36	9.98	5.83	5.15	4.13	3.15
Nebraska	286	2.66	3.79	6.15	8.10	11.13	18.44	10.64	9.48	6.15	5.40	4.45	3.69
Kansas	365	2.24	3.24	6.18	7.89	9.62	14.43	8.96	8.10	6.18	5.26	3.85	2.89
Total	2,667	2.45	3.53	5.79	7.51	9.93	15.31	9.80	8.83	5.79	5.01	3.97	3.06
South Atlantic													
Delaware	33	2.36	3.26	5.41	6.91	9.91	13.28	9.44	8.15	5.41	4.61	3.96	2.66
Maryland and Dist. of Columbia	171	2.13	3.01	5.43	7.10	9.45	14.51	8.52	7.53	5.43	4.73	3.78	2.90
Virginia	295	2.19	3.30	5.78	7.55	9.91	14.16	8.76	8.23	5.78	5.03	3.96	2.83
West Virginia	287	2.04	2.76	4.98	6.54	9.05	13.42	8.16	6.90	4.98	4.36	3.62	2.68
North Carolina	321	2.05	2.89	5.12	6.69	8.92	12.92	8.20	7.23	5.12	4.46	3.57	2.58
South Carolina	197	1.88	2.65	4.85	6.19	8.35	12.03	7.52	6.63	4.85	4.13	3.34	2.41
Georgia	330	1.60	2.33	4.40	5.71	7.76	10.30	6.40	5.83	4.40	3.81	3.10	2.06
Florida	289	2.67	4.00	6.56	8.16	10.69	16.29	10.68	10.00	6.56	5.44	4.28	3.26
Total	1,923	2.10	3.03	5.33	6.88	9.21	13.38	8.40	7.58	5.33	4.59	3.68	2.68

cheapness of municipally-supplied electricity is a delusion. Furthermore, when the relative burden of taxation is considered, private enterprises are underselling the municipal plant almost everywhere in the country and there is evidence of political expediency on the part of the municipal plant in subsidizing the small user, who represents the majority of the votes, at the sacrifice of a really promotional rate structure. As might have been expected, the comparison between the towns served by private companies and those supplied by municipal plants gives the same answer as the one found last year by Dr. Warren M. Persons, who analyzed the results of 290 matched pairs of municipal and private plants.*

Table I shows a comparison between municipal and company averages for the various geographic divisions of the country, as defined by the U. S. Bureau of the Census.

As far as the small consumer of 25 kwhr per month is concerned, the average municipal plant for the United States as a whole undersells the typical private company by 4 per cent. For all other quantities of use, the company offers lower rates. For the medium-sized consumer of 40 kwhr per month, the municipal town is 0.4 per cent higher than the company. Above this, the price advantage is increasingly on the side of customers of the private company. At 100 kwhr per month, where lights, small appliances and a refrigerator are used, the customer of the average municipal plant pays 5 per cent more than he would to a company. Where cooking is added, the average municipal plant

* "Municipal and Company Rates Compared," an analysis of the study of Dr. Warren M. Persons, EEI BULLETIN, February, 1935.

TABLE II—UTILITY COMPANY ELECTRIC RATES IN THE UNITED STATES *(Continued)*

Residential Electric Rates in Effect January 1, 1935 Average by States and Geographic Divisions

(From data in Federal Power Commission, Electric Rate Survey—State Reports, 1935)

STATE	Number of Communities	Average Net Monthly Bill — Kilowatt-Hours Per Month						Average Charge Per Kilowatt-Hour — Kilowatt-Hours Per Month					
		25	40	100	150	250	500	25	40	100	150	250	500
East South Central													
Kentucky	375	2.42	3.40	5.69	7.39	9.50	13.80	9.68	8.50	5.69	4.93	3.80	2.76
Tennessee	299	1.74	2.52	4.57	5.95	8.20	12.45	6.96	6.30	4.57	3.97	3.28	2.49
Alabama	313	1.77	2.55	4.42	5.66	7.70	11.69	7.08	6.38	4.42	3.77	3.08	2.34
Mississippi	208	2.43	3.34	5.97	7.21	9.13	13.35	9.72	8.35	5.97	4.81	3.65	2.67
Total	1,195	2.08	2.95	5.13	6.54	8.63	12.82	8.32	7.38	5.13	4.36	3.45	2.56
West South Central													
Arkansas	275	2.69	3.70	6.33	7.84	10.05	15.23	10.76	9.25	6.33	5.23	4.02	3.05
Louisiana	243	2.73	3.83	6.40	7.93	9.95	14.97	10.92	9.58	6.40	5.29	3.98	2.99
Oklahoma	374	2.54	3.64	5.92	7.65	9.96	15.60	10.16	9.10	5.92	5.10	3.98	3.12
Texas	836	2.68	3.68	5.97	7.62	9.28	13.48	10.72	9.20	5.97	5.08	3.71	2.70
Total	1,728	2.66	3.70	6.08	7.70	9.64	14.42	10.64	9.25	6.08	5.13	3.86	2.88
Mountain													
Montana	134	2.43	3.35	5.50	7.26	9.67	15.85	9.72	8.38	5.50	4.84	3.87	3.17
Idaho	139	2.09	3.21	5.21	7.24	8.17	11.90	8.36	8.03	5.21	4.83	3.27	2.38
Wyoming	53	2.95	4.59	7.16	10.03	14.38	25.67	11.80	11.48	7.16	6.69	5.75	5.13
Colorado	190	2.66	3.76	6.07	7.89	10.68	17.22	10.64	9.40	6.07	5.26	4.27	3.44
New Mexico	64	3.42	5.02	6.99	9.22	12.69	21.13	13.68	12.55	6.99	6.15	5.08	4.23
Arizona	64	3.33	4.77	7.54	10.15	13.86	23.65	13.32	11.93	7.54	6.77	5.54	4.73
Utah	146	2.26	3.45	4.84	6.85	8.00	11.73	9.04	8.63	4.84	4.57	3.20	2.35
Nevada	26	2.23	3.52	6.09	8.50	10.84	16.83	8.92	8.80	6.09	5.67	4.34	3.37
Total	816	2.57	3.76	5.86	7.91	10.23	16.35	10.28	9.40	5.86	5.27	4.09	3.27
Pacific													
Washington	234	1.78	2.60	4.46	5.97	8.33	11.16	7.12	6.50	4.46	3.98	3.33	2.23
Oregon	163	2.19	3.24	5.31	7.03	8.82	12.98	8.76	8.10	5.31	4.69	3.53	2.60
California	401	1.73	2.53	5.11	7.25	8.13	10.83	6.92	6.33	5.11	4.83	3.25	2.17
Total	798	1.83	2.67	4.97	6.87	8.31	11.31	7.32	6.68	4.97	4.58	3.32	2.26
Total United States	**16,007**	**2.23**	**3.20**	**5.47**	**7.10**	**9.38**	**14.02**	**8.92**	**8.00**	**5.47**	**4.73**	**3.75**	**2.80**

charges 17 per cent more and, for those who heat water in addition, 39 per cent more than the private utility. At 500 kwhr per month, the "fully electrified home" in the average town supplied by a municipal plant has to pay $234 per year, or $66 *more* than where a company supplies the service.

This is another of those striking commentaries upon the contributions of the municipal plants to the realization of the "larger life" (whatever that may mean) so glowingly promised by the New Deal. In some of the individual states, this comparison becomes extreme. In Minnesota, for example, the consumer of 500 kwhr monthly pays 45 per cent more under municipal ownership, in Illinois 71 per cent more and in New Jersey 92 per cent more; in the latter case nearly double the price paid for electricity under private utility ownership.

The Item of Taxes

Municipal plants are substantially tax-exempt, while the private companies repay a considerable part of their gross revenues to various governmental agencies in the form of taxes. When these enterprises are placed on the same footing, the results for even the small quantities of use show a marked advantage in favor of the customers of private enterprise, and this advantage increases with the consumption of electricity.

Promotional Rates versus Political Expediency

It is no new discovery on the part of electric utility companies that unit costs go down with an increase in the amount of electricity used. It is a characteristic of almost every article of sale and is useful to stimulate larger purchases by means of lower prices. It, however, runs counter to the point of view repeatedly expressed in high quarters that because the well-to-do can afford to pay for what they want they should be charged more and the lower prices reserved for the "common man." The fact that the "common man" also has the most votes is here illustrated by the divergence of municipal and company rates and represents a point of view which utilities might well take with increasing seriousness as an outcome of the changes in social conditions in this country during the past generation. From the chart it certainly would appear that, if municipal rates (at least in the large use brackets) are "at cost," the private companies are making considerable sacrifices in order to bring the blessings of the larger use of electricity to the homes of America; and if company rates are "at cost," then the municipal plants are making an unconscionable profit from their larger con-

sumers. The truth is probably somewhere in between.

Method of Computation—Simple Arithmetic Averages

These figures have all been determined by the common arithmetic mean, or *average*. This is a term on the tongue of every business man and is probably the most generally-used method of statistical presentation. It is familiar to the ordinary reader, even if he has no special mathematical or statistical training. Yet the use of this method of simple arithmetic in connection with the analysis of municipal electric bills has been criticized as resulting in "misleading averages" and as not presenting "a fair and accurate picture of the average rates charged by municipal plants" and a statement that the only proper method is to "weigh the averages according to the size of the community or the number of consumers served."**

Surely the method of simple arithmetic averaging needs no defense. The elementary textbooks are sufficient to show that a "weighted average" may bring different results than an "arithmetic average." In the present analyses the use of the arithmetic average shows and is intended to show one and only one thing—which was quite definitely stated in the first analysis—namely, the prices charged for domestic electricity in the typical, average town in the United States by municipal plants and by company plants. Thus, the average rates in 100 small towns are not obscured by the weighting of one or two large cities greater than their sum total. The comparison in these municipal and private averages has not been juggled on either side.

The Federal Power Commission uses the "simple arithmetic average" method, apparently with approval, in support of studies it has made. A comparison of electric rates in cities of 50,000 and over served by municipal plants and by private companies was prepared by the Commission and presented to the U. S. Senate and House Interstate Commerce Committees in hearings a few months ago on the Public Utility Bill.*** As stated in that report, the tabulations of unweighted average bills "refer to 'typical bills' rather than cities or utilities."

The "weighted average" method is proper in its right place and in obtaining what an average *customer* pays; such a system of calculation does not merely reflect rates, but density of population or customers as well. But as in the present instance where we are dealing with several different quantities what shall the correct weighting be? Fairness and consistency in the use of the "weighted average" dictates that the actual number of customers using each specific quantity should be used for the weighting. Weights dependent upon the total *number* of domestic customers do not show the accurate picture and are worthless in the consideration of any except those of the lower use brackets.

** Letter of Vice-Chairman Manly of the Federal Power Commission to Mayor LaGuardia of New York City, published in newspapers October 31, 1935.

*** "Comparison of Rates of Municipal Distribution Systems and Independent and Subsidiary Private Companies in Cities of 50,000 and More Population." Prepared by Federal Power Commission, and submitted by Dr. W. M. W. Splawn to Senate Interstate Commerce Committee Hearings on S. 1725, April 16, 1935, pages 90 to 95. House Hearings, April 15, 1935, pages 2196-2198.

World's Most Scientifically Designed System of Highway Safety Lighting Inaugurated

RIDING at the head of a procession of automobiles carrying officials high in government, automotive, and public safety affairs, Lieutenant-Governor Harold G. Mosier of Ohio, on the evening of October 21, initiated the first installation of a unique system of highway lighting which, if adopted on mass scale, will provide greater safety and seeing comfort for the millions who travel the nation's auto routes by night.

The new installation, located about 15 miles southeast of Cleveland, and a few minutes west of Chagrin Falls, Ohio, illuminates a mile-and-a-quarter stretch of winding concrete on heavily traveled route No. 422.

The new system of safety lighting—installed by General Electric in cooperation with the Ohio Department of Highways—was designed by K. M. Reid and H. J. Chanon, engineers of General Electric's Incandescent Lamp Department at Nela Park, Cleveland.

It consists of 39 lighting units, of revolutionary design and shaped like an "Admiral's Helmet," mounted 25 feet high, spaced 125 feet apart, and extending five feet out over the pavement. Each unit employs an oval-shaped, "terraced" reflector and a 400-candle-power incandescent lamp. The reflectors are made of Alzak aluminum, which possesses the highest reflectivity of any metal except polished silver. These units are so coordinated as to permit light from each to overlap, or criss-cross, light from its nearest neighbors without shining directly into the eyes of the motorist—no matter in which direction he is going.

Unique installation near Cleveland employs glareless criss-cross lighting; offers greater safety and seeing comfort to motoring public which in 1934 paid toll of 12,200 killed and 118,000 injured in night accidents

Personalizing the Company

The District Representative Plan

By N. G. Reinicker

Vice-President and General Manager, Pennsylvania Power & Light Co.

An address before the Convention of the Pennsylvania Electric Association, Bedford Springs, Pa., Sept. 4, 1935

IN days gone by it was generally held that the Company which rendered continuous service with well-regulated voltage was giving *good* service.

Today our customers take continuity for granted, but with the ever-increasing use of electricity in the home, the word service now means much more than merely furnishing electricity. It means assuring satisfaction in its use. This implies satisfactory operation of appliances, an understanding of the essential fairness of rates and how to take advantage of them. It implies seeing that the customer gets his money's worth and much more.

Politicians, municipal ownership advocates and many others have succeeded quite well in focusing attention on the rates charged by the so-called big, cold-blooded corporations. This has developed suspicion and undermined the confidence the customer may have had in the Company.

* * *

In 1925, Mr. Owen Young said: "Only one danger confronts us. The danger is that the growth of our industry will outrun public understanding . . . that people will see and fear our size without understanding our service."

In 1932, Mr. Cortelyou, speaking here at Bedford Springs, said: "With the public friendly to its utilities, they need not fear those who attack them for ulterior purposes. Our fate rests with our customers . . . the utility business must not be allowed to fall into a stereotyped routine of unvarying and machine-like repetition which in time becomes dead and dehumanized . . . it must be kept a living organism . . . *thoroughly human in its purpose and outlook.*"

I might add *"and thoroughly human in its presentation."*

* * *

The average electric customer sees too many company faces. He is confronted by a different one every time he turns around: meter readers, salesmen, bill distributors, collectors, cashiers, service-

MR. REINICKER

men—and the impression of the bigness of the company, with its many specialized jobs, certainly makes the customer more susceptible to anti-utility propaganda.

The customer cannot know all these people—there are too many of them—and to make matters worse, they often are not "knowable" people. They haven't been picked for their ability to "mix." They haven't been picked for anything but their ability to do their job honestly and efficiently. They haven't been trained to see "load" as the objective of their labors and "public relations" as the path to "load," and generally have so much work to do in a day that they can pay but scant attention to any one customer.

* * *

There is no more crying need today than that for mutual understanding between the customer and the Company. It seems to me that the only way to obtain the customer's complete understanding and confidence is through personal contact.

As I see it, our need today is for an ambassador extraordinary, minister plenipotentiary, to the Court of His Majesty, the Customer. We need *more* than an ambassador—because we must dispense with form and formality. We need an employee who, in his own person, in his own words and through his own acts will present us to the customer in our true colors—unexaggerated and unadorned. Such an employee must be the Company to the customer.

It is fundamental that any attempt to present the Company to the customer through the medium of an individual must take into consideration—must make allowance for—the characteristics—racial, religious, mental and psychological—of the customer. In other words, in order that the Company may be thoroughly understandable to any given type of customer, it must be presented to that customer in terms which, by outlook and environment, he is able to understand. To put it still another way, the Company must be presented to the customer *in terms of himself.*

This implies, of course, that any plan of personalized presentation must be a plan which adjusts itself automatically to the group to which it is applied.

* * *

In addition to the need for improved public relations, there has been a need for some plan which would enable the utilities to dispense with the innumerable trips into the same territory by delivery trucks, service trucks, demonstration trucks, bill delivery cars and collectors' cars. Especially in small towns, villages, settlements and surrounding rural and farm territory, the cost of automobile transportation for employees carrying out the necessary service routine reaches large proportions even though the time and attention given the customer is inadequate.

We once had occasion to trace on the map of a small district in our territory the routes followed by the various trucks operating out of the local headquarters.

We were astounded at the degree to which these lines crossed and recrossed; how routes coincided, and the number of times Company cars and trucks passed any given point during the day. It became apparent then that something would have to be done to consolidate all these trips.

* * *

Pennsylvania Power & Light Company tries to do all this through what is known as its District Representative Plan.

In 1929, we made an experimental installation of the District Representative Plan in the Hawley Division, which is a territory in Pike and Wayne Counties centering in Hawley and Honesdale. The results after one year's experience indicated the desirability of further experiment, and in 1930 the plan was extended to the Mt. Pocono District, where the results were, to say the least, gratifying. Since then the plan, no longer in an experimental stage, has been extended until we have now, at this stage in our program, 141 District Representatives covering most of the thinly populated areas of the Company's territory.

About 120,000, or 39 per cent, of our total residential and farm customers are now served under this plan. About 8200 of this total are farm customers—75 per cent of all farm customers on our lines.

* * *

This Plan is based on the fundamental fact that the way to increased residential load is through the customer's heart. The customer must like the Company and believe in it first—the rest will follow.

Practically, this is accomplished by concentrating in one man, whom we call a District Representative, all the services rendered and contacts formerly made by many different employees.

It is obvious that the greatest care must be taken in the selection of this man. He must of necessity perform the duties of meter reader, service man, bill distributor, collector, appliance demonstrator and salesman. He must handle complaints and explain rates, and be a general all-around utility man.

He should be a member of the community which he is to serve, and a member of the most generally esteemed social organizations. Extensive personal acquaintance is highly desirable, and he should be able to speak the languages of his customers. This requirement is especially necessary in the anthracite regions or in other localities where group customs and habits are prevalent.

Previous employment with the Company, selling experience, mechanical ability and knowledge are desirable, but not essential, providing he has a good personality, strong initiative and ability to contact people successfully. Tact is a primary requisite.

He should have the equivalent of a High School education and, since the work requires adaptability and is rather strenuous in nature, he should be under 40 years of age.

* * *

Our experience so far indicates that salesmen, clerks, draftsmen and meter readers make the best D. R.'s, as they are generally called, although there is no fixed rule in this respect. Everything depends on the individual. We have had success with truck drivers, linemen, groundmen and service men. Men fresh from college have turned out to be excellent D. R.'s, although they required much more training than those with previous electric utility experience.

* * *

During his preliminary training, and while he is making his first contacts, the District Representative attends classes which are held on weekdays, usually from 3 to 5 in the afternoon and from 7 to 10 at night. This continues for one month. At this "school" he is not only taught the fundamentals of his job but given in addition specialized information along certain lines. Specialists in rates, meters, appliances, billing, sales, etc., give him a basic knowledge of their particular fields, and at the end of the school he is required to pass a written examination in all the subjects which have been covered.

However, his training does not stop when he has successfully passed this examination. As long as he is on the job he attends regular weekly classes at which he is brought up to date on recent developments in appliances, sales materials, service methods, changes in rates, and exchanges experiences in handling customers with the other D. R.'s. The responsibility for the continued training of the District Representative is assumed, in the main, by the Division and District Managers.

* * *

After training, the D. R. is assigned a territory of from 700 to 900 customers, depending upon density of population, type of customer, geographical characteristics and sales potentiality. Experience has shown that it is undesirable to assign a larger number to one representative, except in urban areas, because the time available for each customer is otherwise so limited that he reverts to the status of meter reader to the detriment of his other duties.

To put it another way, the D. R. must not be so pressed for time that he cannot repair the plug on the cords of Mrs. Brown's vacuum cleaner, call Mrs. Jones' attention to the desirability of a new type of toaster, explain to Mrs. Smith why her December bill was higher than her November bill, or to congratulate Mrs. Schultz on the birth of a grandchild.

* * *

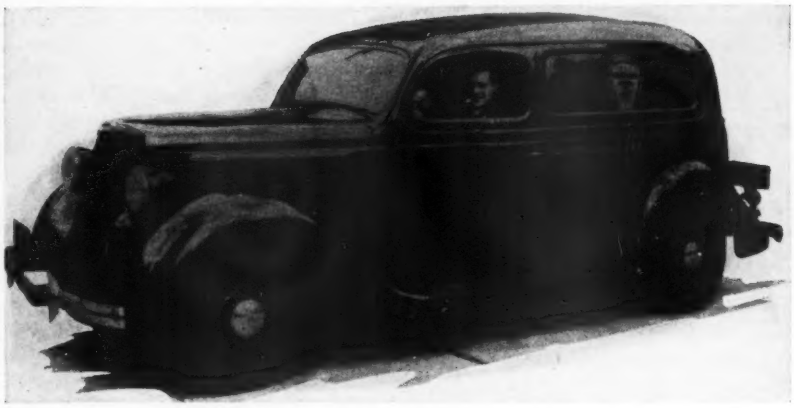
The Representative operating in scattered and rural areas is supplied with a light panel body truck for his sole use. This truck is of a standard design and is painted the usual red and black of all such Company equipment. Both sides of the truck bear the Company symbol and name; and the employee's name as Representative of the Company. (See Exhibit "A.")

This truck in more ways than just color is a bright spot in the Plan. It is equipped with a compartment to carry small appliances, lamp bulbs and repair parts. There is also space for a range and refrigerator for display purposes, and the latest model of one or the other is carried most of the time.

The District Representative operating entirely in the confines of small towns is not assigned a truck. The use of a truck in the 32 more thickly populated areas where the Plan is now in operation is not only a hindrance to the D. R. in his door-to-door calls, but is uneconomical because customers in such areas are located within very short distances of a Company office and are accustomed to using it. They go to the showroom to see appliances on display, and seem to prefer to pay their bills at the cashier's window. As a consequence, general service and delivery trucks are necessary, and assignment of a truck to the D. R. cannot be justified, principally because it would not replace existing equipment. In these territories as many as 1200 customers may be taken care of by one man.

All D. R.'s are equipped with a complete sales portfolio. They carry a small tool kit containing pliers, screw drivers and tape for making minor appliance repairs.

All Representatives are required to have telephones in their homes as part of the equipment for the job, and must



(Exhibit A)

keep their customers advised of the telephone number. This is usually done by a printed card with the D. R.'s name, address and telephone number hung near the meter. When the D. R. is not at home, messages are taken by a member of the family.

The D. R. is furnished also with a card (see Exhibit "B"), which is hung in a prominent position on the living room or dining room fixture of vacated houses so that the next tenant can obtain prompt connection of service.

The records show that the customers learn to use the telephone and that calls fall approximately in this order: appliance servicing, requests for collection of certain bills, requests for disconnection or reconnection of service, information on security deposits, reports of street light outages, no-light calls, and questions concerning cooking.

This not only relieves the regular service men of these calls, but gives the D. R. an additional point of contact and an opportunity to teach the customer how to replace fuses—locate "shorts" in equipment and wiring, etc. As a consequence, service calls in such territories are gradually reduced to a minimum.

* * *

When the District Representative is assigned to a territory, a letter of introduction bearing his photograph and telephone number is sent to each customer in that territory, and if he is to be furnished with the standard panel body truck, his photograph shows him with the truck in the background. This introduction paves the way for the better service and additional attention the customer receives. (See Exhibit "C.")

* * *

The District Representative calls regularly upon each customer in his territory. He is responsible for keeping the customer's appliances in good operating condition and *in use*. He makes small repairs and adjustments, investigates radio interference and other complaints and reports those he is not able to settle. Service difficulties are investigated, wiring and fixtures are inspected, improvements are suggested and simple meter accuracy tests are made whenever necessary.

The Plan is particularly adaptable to sparsely settled and rural areas. The D. R. not only explains the necessity for the rural extension minimum guarantee and the way it is calculated, but is able to improve the situation materially in two ways: first, by securing new customers, which reduces the amount of guarantee required per customer, and second, by introducing new appliances and uses, which show each customer how to get the benefit of all the kilowatt-hours included in the minimum guarantee. In addition, his familiarity with the territory enables him to develop prospects for new extensions. In doing all this he serves not only the Company but himself, for each new customer represents additional opportunities for the sale of electrical equipment. This phase of his work is important at the present time.

A regular monthly call is made for the purpose of reading the meter and a subsequent call is made for the purpose of delivering the bill and collecting the amount due. The collection service is solely for the convenience of the customer and, although this form of payment is optional, we are collecting on an average 20 per cent of the revenue of these areas in this manner, and in some territories as much as 57 per cent. In all territories the amount collected by the D. R. is gradually increasing.

He not only collects current accounts, but is responsible for those less than one month overdue. In the case of accounts one month or more overdue, he tries to find the reason for the delay in payment but has no authority to effect a compromise. He then may be relieved of the responsibility of collection, but, if disconnection becomes necessary, he is notified in advance.

PUBLIC
PENNSYLVANIA POWER & LIGHT COMPANY
SERVICE
EFFICIENT
For Your Electric Service
Please Call
Mr. DISTRICT REPRESENTATIVE
Telephone
City
He is your Personal Representative and, on request, will be glad to discuss your Electrical needs.
Pennsylvania Power & Light Company
I Am READY KILOWATT
Your Electrical Servant
I am the personification of those many willing, tireless servants who stand on tiptoe in the wall just behind the switch ready to spring forth at your summons ...serving you tirelessly, day and night, rain or shine, snow or sleet, Sundays, holidays, every hour of every day of every year ...servants who are always ready to do your bidding without rest, vacation, sick-leave or sleep.

(Exhibit B)

In widely scattered rural areas, he may be assigned other minor duties, such as changing street lights. He may also read meters and make casual routine inspections of unattended hydroelectric stations and substations.

We have found that as soon as the Plan becomes firmly established in any given area, it is only in rare cases that there is need for any trips by automobiles, trucks or employees other than the D. R. He and his truck take care of everything except line maintenance work, trouble shooting, replacing transformer fuses, and delivery of heavy appliances.

* * *

The salary of the D. R. is fixed at a base of $90 to $100 per month. In addition, load building compensation is paid on all sales of appliances, varying with the type of appliance, and is automatically increased upon attainment of set quotas. The average earnings for the past 12 months of those who have been established for one year is $140 per month, and some have averaged $260 per month. A monthly earning of $260 should by no means be considered a maximum. The D. R. who has the confidence of his customers, who is a good salesman and who has a thorough grasp of the situation is, in effect, operating his own business—he can take compensation out of his territory each year in proportion to his selling ability and the purchasing power of his customers.

* * *

The written reports required of the District Representative are reduced to a minimum. He is encouraged in every way to spend as much time as possible on the job—*to live with it*—to know his customers well. The men become personal friends of their customers, are usually known by their first name and in turn know the business problems, relationships, habits and peculiarities of their customers. They must be able to advise and to help.

* * *

Once confidence is gained, excellent public relations are assured, and load building becomes largely a matter of improving the customer's standard of living—or his business methods. One D. R. said to me recently, "I know right now the people I am going to sell ranges to next year." It is interesting to note that this man had previously been a lineman for over ten years.

I might talk for hours on the manifold methods of approach which these men have adopted—innumerable keys to the customer's confidence, but instead I am going to give you a few typical cases which I think show their methods and the results they have secured.

* * *

In one territory a new rural electric line was built past a truck farm operated by an old man, known as Uncle John, and his wife, Aunt Sarah. They had lived on the farm for over 25 years, but had very few close friends or relatives. Over a period of three years they were converted to the use of electricity and gradually shown how to build up their connected load to 21 kw.

One night Aunt Sarah, very much excited, called our D. R. on the 'phone at 1:30 A. M., saying that Uncle John was very sick and would he please get a doctor quick. The doctor was taken out, did what he could, yet the heart attack proved fatal early the next morning.

Arranging all details for the funeral, finding a hired man, acting as the old lady's business and financial adviser, all have made this particular D. R. one of the most talked of persons in the community. The Company's prestige has tremendously increased and customers in that territory do not have that frequently encountered anti-corporation feeling.

* * *

We have the case of a farmer who had once been a customer of ours, but who had requested disconnection. We had tried hard to get him back and had failed. We hadn't been able to find out what was wrong.

Three months after the Plan was applied to that territory, this farmer hailed our man and asked what electricity was costing. He told the D. R. that he had disconnected because the service charge

PENNSYLVANIA POWER & LIGHT COMPANY

NINTH AND HAMILTON STREETS

ALLENTOWN, PA.

March 1st, 1934

To Our Customers:-

We believe you will be well pleased with a Personal Service Plan which we are now putting in effect in your territory. This plan gives to each of a number of specially trained representatives of our company the responsibility of caring for the electrical needs of a limited group of customers. It will be the duty of the representative in each district, to visit every one of his customers monthly.

This representative, at your request, will be glad to show you how to read your meter and how to replace fuses properly. If you wish he will also inspect your electrical appliances, explain the best way to use them and if necessary, make minor adjustments and repairs on them which are so frequently neglected in busy households. This cooperation is given gladly, so that you may get the most economical and beneficial service from the electricity used. This representative will also read your meters monthly and give you dependable information on new appliances in which you may be interested.

A picture of your District Representative is below so that you may readily identify him. Please feel free to call for his services. Your suggestions and criticism of this plan or service will be appreciated at all times.

ERNEST L. SHAFFER
DISTRICT REPRESENTATIVE
FOGELSVILLE, PENNA.
TELEPHONE 3-6677

Yours very truly,

Chas. E. Oakes.

Chas. E. Oakes
Division Manager.

(Exhibit C)

was too high and because the meter reader had no interest in him and had proved it by driving over the chickens. He had called to our man because the truck always slowed down for the chickens and on one occasion had stopped dead to prevent hitting some of them.

The farmer was told that there had been no change in rates—that his minimum charge would be the same, but that he would get personal attention to see that the most was obtained for the money spent for electric service.

As a result, his kitchen is now completely electrified, he is contemplating buying some electrical farm equipment and, furthermore, he is a staunch supporter of the Company.

* * *

Then there was the woman who lost no opportunity of expressing her adverse opinion of the Company. No employee could get into her house to find out exactly what was wrong except the meter reader and he usually came out faster than he went in—without any information.

We put the Plan into effect and the Representative tried every conceivable way of solving the problem. He finally called on the 'phone, asked for an appointment—and got it. It appeared that 3½ years previously she had purchased one of the combination coal and electric ranges from a dealer. It had never been demonstrated, and, as a consequence, the oven had never been used. To make matters worse, the enamel had been chipped when the range was delivered.

Our D. R. sympathized with her—got out his catalog, sold her a modern range and sold her old range to another customer for more than enough to pay for the new range she eventually bought. Both ranges were properly demonstrated.

She was not only delighted with her new range and with the service but broadcast to such good effect that two of her neighbors purchased electric ranges. Her neighborhood is now decidedly pro-Company and four electric ranges are cooking where one cooked before.

* * *

Another D. R. interested one of his farmer friends in poultry raising, secured the necessary technical data and helped to arrange the layout, sold the farmer an incubator and brooder, and showed him how to arrange for marketing the chickens.

This venture has been such a success that poultry is now this farmer's second largest source of revenue. He credits the Company with showing him how to do it.

* * *

There is a road stand in the Pocono Mountains whose proprietor never loses an opportunity to praise the Company's service. He says our District Representative taught him how to attract trade and has helped him make a lot of money. He is properly grateful and his place is completely electrified.

* * *

Now these are not particularly exceptional cases—we have hundreds like them. They are merely typical of what is happening in all District Representative territories and are the sort of thing that personalizes the Company.

I would like to cite one more case, which will give you some idea of the esteem in which these men are held. One man was promoted to a supervisory position and transferred to another division. On the eve of his transfer, 78 of his former customers combined to give him a farewell party.

* * *

It is obvious, I think, that by far the greater part of our return from the plan is in the form of vastly improved public relations, which cannot be directly evaluated. Minor complaints invariably show a sharp decrease immediately after installation of the Plan. This is due to two reasons:

First—Much of the cause of complaint is removed by the Plan, and

Second—Any misunderstandings or difficulties which do crop up usually are settled on the spot. Doubts, suspicions or questions which may come to the customer's mind find a quick and satisfying solution through the frequent visits of the D. R.

At the start questions and complaints concerning rates and billings are always the most numerous, but by the end of the first year are less than 10 per cent of those received the first few months. After the first year such questions and complaints remain approximately constant and relate principally to appliances.

Especially during the last two years we have had many complaints from customers located in small communities, who were paying minimum bills of $1.00. The D. R., through an educational program, has shown these customers how the unit costs decrease very rapidly after the $1.00 minimum and these complaints are now at a minimum.

Appliance payment delinquencies usually show a substantial decrease under the Plan because the D. R., knowing the financial status of his customers, is less likely to "over-sell" than the salesman who has no interest in the customer beyond consummating the sale.

* * *

However, there is a return from the Plan that can be evaluated, and that is the increase in kwhr consumption per customer which comes with sales of additional appliances and through the increased use of appliances already sold.

Taking the installation as a whole, we find that the Plan accelerates the increase in kwhr sales per customer. The average rate of increase in D. R. territories last year was approximately 36 kwhr per customer per year, against approximately 26 kwhr in unconverted areas, a difference of 38 per cent.

A portion of this difference is without question due to the higher monthly minimum required of the rural line customers, and their purchase of devices to use the kilowatt-hours included in the minimum.

Our sale of appliances averaged $6.20 per customer last year in D. R. territories compared with sales of $4.70 per customer for the same period elsewhere. The increase in appliance sales in D. R. territories for the 12 months ending July, 1935, was $1.03, whereas elsewhere the increase was only $0.70.

* * *

In calling your attention to some of the advantages of this Plan, I am not attempting to claim that we have made any remarkable discoveries or that we have developed anything essentially new. Some of you will recognize its resemblance to the old Stone & Webster set-up—enlarged and adapted to the P. P. & L. Co. system.

Some might say that the Plan has its merits, but that it requires supermen to fill the jobs. Our experience has been that there is no particular difficulty in finding suitable men for this quite popular position.

We are trying through this Plan to meet our customers on common ground—to present ourselves in human terms—to merit their approval, to gain their confidence.

In my opinion it is only in some way such as this that our electric companies will win the confidence of the mass of our customers which will bring us the increase in use of our service that we must have.

August F. Hockenbeamer

AUGUST F. HOCKENBEAMER, member of the Board of Trustees of the Edison Electric Institute and President of the Pacific Gas and Electric Company, died of a heart attack at his home in Berkeley, Calif., the night of November 11. One of the best known leaders in the business world, Mr. Hockenbeamer was 64 at the time of his death. Born in Logansport, Ind., and attending the public schools there until the age of 16, his climb to an outstanding position in the utility field was inspirational.

Before leaving school he had taken a course in stenography, and he soon left home to apply for a job as a stenographer with the Pennsylvania Railroad. No such position was open at the time, so he became a janitor for the railroad.

While at this work he met L. F. Loree, now president of the Delaware and Hudson Railroad, then a division engineer of the Pennsylvania. Mr. Loree agreed to give Mr. Hockenbeamer some part-time stenographic work, and soon thereafter he became Mr. Lorees private stenographer. He remained with the line until he was 32 years old, when he left to join N. W. Halsey & Co., New York investment banking firm.

The banking firm was a stockholder in the Pacific Gas and Electric Company, and in 1907, when Mr. Hockenbeamer had been with the company for four years, he was sent west to inspect the utility concern's properties. He so impressed the officials of the utility company that he was requested to remain with the firm for a year as comptroller.

He accepted the invitation, and at the end of the year he was made vice-president and treasurer. In June, 1914, Mr. Hockenbeamer conceived the idea of selling the customers preferred and common stock in the company. The company had between 400,000 and 500,000 customers at the time, all of whom could be reached within a few days, and the idea was a success, subsequently being adopted by many companies. He succeeded W. A. Creed as president of the company in August, 1927.

All Power Companies Invited To Compete for Coffin Award

INVITATIONS are being extended this month by the Prize Awards Committee, Frank W. Smith, Chairman, to all electric light and power companies operating in the United States to compete for the Charles A. Coffin Medal for 1936.

Under the terms of the Charles A. Coffin Foundation as established by the General Electric Company, the Charles A. Coffin Award will be made to that company which during the year 1935 has made a distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry.

Presentations of accomplishments by companies desiring to compete for the award are to be made not later than April 1st, 1936. The presentation of the award will be made at the 1936 Convention of the Institute. In addition to the Charles A. Coffin Medal, the award carries with it a gift of one thousand dollars for the employees' benefit fund of the winning company. The Committee of Judges for the Charles A. Coffin Award consists of Thomas N. McCarter, President of the Edison Electric Institute, Karl Taylor Compton, President of the Massachusetts Institute of Technology and Mr. Smith, Chairman, Prize Awards Committee.

The invitation to compete for the Award has been broadened this year to focus attention more directly upon the more important present-day problems confronting utility management.

The terms of the Coffin Award in calling for a "distinguished contribution" to the industry, indicate an accomplishment requiring an important decision or action in the field of policy, the invitation states. A statement of such outstanding accomplishment, it is suggested, should be made the basis and principal feature of the presentation by companies competing for the award. Such a major contribution, dedicated to the convenience of the public and beneficial to the industry, will ordinarily be reflected in the operations of various departments of management, and the following subjects, and any other appropriate items, may be presented as contributory evidence in support of the principal accomplishment upon which the exhibit is based.

General Administrative Features

- Financial operations as reflected by the company's balance sheet and income statement.
- Production and sales of electric energy.
- Rate developments.
- Important changes in company administration for increased efficiency.
- Employee relations.
- Relations with consumers and the public.

Commercial and Accounting Features

- Increased usage of electrical energy and revenue.
- Promotional and sales programs.
- Cooperative sales development.
- Financing plans.
- Advertising programs.
- Trade relations.
- Rural electrification.
- Credit and collection methods.
- Accounting developments.

Engineering and Operating Features

- System operation.
- Reliability of service.
- Generation, transmission, distribution and construction designs and practices.
- Accident prevention.

Awards have been made in the past to:

- Southern California Edison Company in 1922.
- Public Service Company of Northern Illinois for 1923.
- Consumers Power Company for 1924.
- Commonwealth Edison Company for 1925.
- Edison Electric Illuminating Company of Boston for 1926.
- Puget Sound Power and Light Company for 1927.
- El Paso Electric Company for 1928.
- Public Service Electric and Gas Company for 1929.
- Virginia Electric and Power Company for 1930.
- The Hartford Electric Light Company for 1933.
- The Tennessee Electric Power Company for 1934.

What the Utility Executive Expects of the Safety Director

By N. M. Argabrite

Vice-President, American Gas and Electric Company

An address before the National Safety Council, Louisville, Ky., Oct. 17, 1935

THIS so-called Safety Movement is, to the most of us, a comparatively recent thing. I mean by that that in the earlier days of the electric industry we paid comparatively little attention to the question of accidents. An accident, as some of us viewed it some twenty-five or thirty years ago, was something that could not be avoided, something that just happened. Those were the days of small properties. Those were the days when we had small power houses, each manned by an engineer, a fireman, and an oiler—in many instances working twelve hours per day. We had three or four so-called electricians and linemen who did all sorts of work from unloading coal to stringing wire and wiring houses. Our machine units were small and our business was smaller, and I suppose that with organizations of that size that every man was more or less of an individualist. He was often his own foreman and he looked out for himself.

As I look back over those days, I can recall accidents in sufficient numbers to convince me that our accident rates must have been terrifically high. I cannot help but compare one of the first properties with which I was concerned with one of the large properties in which I am now interested. On the old property of thirty-five years ago we had not to exceed 22 employees and on the present property we have practically 2200 employees, or about one hundred times the number that we had on the property of earlier days.

During the year 1934, there were two deaths on the present property and the fatalities therefore amounted to a little less than one for each 1000 employees, and if we applied that rate to the small property of 22 men, then we would have had only one fatality on the small property in about fifty years. We all know that the record of the small property was much worse than that. I can recall quite a number of fatalities during my experience on the small properties. My guess is that our accident rate in those days must have been terrific, and yet we paid little attention to that record, purely because it was not driven home to us as vividly as it is in a larger picture where we must face the accusation of having killed two men during a year.

MR. ARGABRITE

This leads me to the conclusion that we became accident conscious as our properties grew, and as the executive began to look through a magnifying glass, so to speak, he saw a picture magnified to one hundred times the picture that he was looking at in the earlier days.

These accidents are viewed by the executive from more than one standpoint. First and foremost, we should view the question of accidents from a humanitarian standpoint and if an executive takes the right view of the question, he will undoubtedly give that phase of the question first consideration. The executive should feel that he has no right to run a business that kills off a number of men each year and leaves a trail of widows and orphans behind to look after themselves as best they can, when it is within his power to reduce that record so appreciably. Not only has he no right to do this thing, but he has no stomach for it. He worries about it primarily from the humanitarian standpoint. His heart aches for the loss of an old faithful assistant and for the family that has been deprived of its breadwinner.

Then there is the question of public opinion. A heavy accident rate will undoubtedly cause very unfavorable reaction in the community served by the organization. People do not look kindly upon any company that is continually creating cripples and causing deaths in their midst. The local press cannot afford to let such things go unnoticed.

Let us, however, face this question more from the financial standpoint. There is the question of his liability insurance, both employee and public, and this is no small item. There is the question of the loss of capable trained men, and I doubt if there is another asset on the property which is of more value to the property than its trained employees.

The executive, as his property grows, comes to the conclusion that these accidents must be stopped, or rather that they must be reduced to the irreducible minimum. He realizes that he, himself, cannot take time to rush here and there to point out to his employees the mistakes which lead to accidents to caution them and to guide them as he would if he were handling a small organization, and he therefore comes to the conclusion that he must place in his organization a man who can give his entire time to this subject and who can by constant effort remove this blot from his industrial record. Once he has come to this conclusion he has only started. It is not as simple as it seems. Hiring a man sounds like an every-day affair and to some of us an hourly affair, but hiring the right man to act as a safety director is a job of major importance.

What kind of a man is this man whom you want to guide and educate your organization? This man must go among the members of your organization; he must get their interest; he must obtain their confidence; he must win their respect, and he must be of such a turn of mind as to be able to unravel the answer

in every instance possible as to what caused this or that accident, and how to prevent its recurrence.

It seems to me that the first qualification is that the man must be mature. I do not believe that you can do as good a job by sending a youngster among old, seasoned linemen and old, seasoned power plant men, and I do not believe that you can get them to pay as much attention to what he has to say as they would to an older and more mature man. I do not believe that you can get very far by taking a man without practical experience in your industry. I can even now hear an old, hard-boiled lineman remarking, "What does that kid know about it; he never climbed a pole"; or, "What does that old duffer know about our business; he was never in this business, he doesn't know anything about it"; and so by hiring the wrong man you may find yourself battling against that old axiom that it is a simple matter "to lead a horse to water, but it is an entirely different matter to make him drink."

If I were selecting a man to head a safety organization on a large property, I should look around for some well-rounded superintendent who had personally, during his career, done all the things that are now being done by those with whom he is to come in contact. I should look for a man who would be recognized as a real, two-fisted, red-blooded man. I should want a man whom every man in the organization would have to respect and would have to acknowledge that this particular man knows at least as much about this business as he, himself, knows. I should want them to say, "This man has had a world of experience. He has seen men die; he has seen the cost of carelessness; he has seen the price that has to be paid for little things which are the causes of most of our accidents." I should want this man a man of friendly nature; a man through whose veins flows the milk of human kindness. I should want such a man as could convince every man in the organization that he is their friend, and I should want a man who is not afraid to stand up to Bill Jones or to Tom Smith, should the occasion arise, and say, "You were the cause of the death of your fellow worker and I shall recommend that your services be no longer required by this company."

This man that I am talking about, should I find such a man, must go forth into the organization, not as a representative of some straw-boss, not as a representative of the manager of a part of your property, not as a representative of some superintendent, but as a representative of the executive head of the organization. I should expect him to speak with authority. I should expect him to so train his mind as to be able to act as a school teacher to the entire organization from the executive down to the lowest laborer. I do not mean that he should take on the air and the attitude of a school teacher. I do not mean that he should drive home his lessons and educate those under him by the methods of the classroom, but I mean that he should feel himself that he has a message to get over to these foremen and to these men and that some way, somehow, by cooperative methods, he must get the proper line of thought into their minds. I should expect him to stand up to the executive, himself, should occasion arise, and say that this or that must be done, and with it all I must expect him to use that authority with great care, with such consideration of the feelings of the department heads in the organization, with such gentlemanly courtesy, as to give no offense in any quarter. A big job? Yes, this is a big job, and yet it is the necessary qualification for a successful safety man.

I should expect this man not to take in detail the responsibility for the prevention of accidents. I should expect him to train the organization in such a way that the "non-commissioned" officers in the organization would continue to feel that the safety of the men working under them was in their keeping; and hand in hand with this idea of responsibility I should expect him to openly pass on the credit for all that is accomplished to those "non-commissioned" officers and the men under them, as occasion may present itself. I should expect this safety man to study and learn from the best authorities the best methods of first aid, of resuscitation, and of matters of that kind. I should expect him to pass on this knowledge group by group down through the "non-commissioned" officers of the organization to the men. I should expect him to formulate, with the assistance of the engineering department or with the assistance of others, such guides and rules and manuals as might be devised to fit the mind of the man he is dealing with and to guide him in the proper path. I should expect him to teach these "non-commissioned" officers how to study the root and the source of accidents. Bill Jones fell from the top of a forty-foot pole. Why did he fall? What went wrong? Was there a cross-arm brace that gave way? Was there a snapping of a pin? Did he come in contact with something hot, not properly shielded, which caused him to jerk back and lose his balance? What was it? Why did it happen and what must we do to prevent it from ever recurring? I expect him to educate those "non-commissioned" officers to find out if Bill Jones was purely careless. If there was no contributory cause to his having fallen from the pole, either get rid of Bill Jones or keep him under observation and learn whether Bill Jones is the right man in the right place. The very fact that a man carelessly commits suicide does not exonerate the boss or the safety man or the manager for having kept this man in their employ, providing they knew of this tendency in his make-up.

I should expect this safety man to pick from the organization, as he begins to see development along safety lines, certain men to act as lieutenants, certain men that he could send to do as he would do, certain men who, if the organization is large enough, might be assigned to permanent duty with him or, if the organization is not sufficiently large to justify permanent time, then part time, as occasion may require. I expect this safety man with his lieutenants to study the organization from top to bottom and to slowly and surely, not through revolution but through evolution, take all of the square pegs out of the round holes and fit them in where they belong. I do not mean by this that the safety man should go to the foremen or the superintendent and say this man or that man must be taken off this kind of work and put on some other kind of work. We must always guard against opening the way for the safety man to usurp the duties of the superintendent or the foreman. We must guard against this carefully. I should expect him through his contact with the foreman or the superintendent to finally develop to a point where he can say: "Mr. Foreman, your man so and so seems to have a lot of trouble holding down the job he is on," and then, if possible, bring out of the foreman a suggestion that he, the foreman, is thinking of changing this man to another job, or he is thinking of getting rid of him in order to save his life. I expect him to train that foreman through his contact with him to think along lines that he, the safety director,

is thinking. I expect him to train that foreman through his assistance and his contact to recognize a square peg in a round hole when he sees it and to build slowly, gradually, and carefully an organization that will be safe, efficient, and productive.

There are men today climbing poles who have absolutely no business to ever go up a pole because of some physical defect of which they, themselves, may not even be aware. There are men today in boiler rooms who have no business in boiler rooms. There are many men today driving cars and trucks who are not qualified to drive cars and trucks, perhaps on account of eyesight, perhaps on account of some nervous affliction, or for other causes. These men must be relocated and be placed where they will fit or, if necessary, be removed.

We talk a great deal and we think a great deal in our studies of the safety question about teaching our men and our foremen and our superintendents to guard against accidents, and yet we leave accident traps lying around loose over our system, and I believe that many executives do not pay the attention that they should to these so-called traps. These accident traps have a considerable bearing on the question of safety to the general public. If you have a large organization and operate a large company, you have your property scattered out over a large number of counties, perhaps states. Accidents are occurring daily to the public, caused by something wrong, or something misplaced, or something not as it should be, on your property. I believe that on a large property your safety director should have under him a full-time lieutenant whose whole job is the constant inspecting of your property from end to end looking for danger spots and accident traps, looking for places in a fence where a child can crawl through and come in contact with dangerous equipment, looking for places where a wire is too low, looking for places where a line crew has left a sink hole, due probably to the after settlement in the hole—looking for everything and anything which may lead to accidents to the public or perhaps to your own organization. I should certainly expect that the right kind of a safety man would develop such a lieutenant and such a branch in his regular work.

When we go before a public service commission or before a court trying to establish the value of our property for rate-making purposes, you will recall that after having listed and priced everything on the property that we could lay our hands on, we then say to the court or the commission: "Your Honor, that is not all. We claim a very considerable value in addition to these values enumerated. We claim a GOING CONCERN value." Then we proceed to paint a picture to the court, outlining what we mean by going concern value, and one of the principal things that we place in our argument for going concern value (and this has been recognized by the Supreme Court of the United States) is the fact that we have a well trained, coordinated and efficient organization built up over a long period of years. We may claim that this one element has a value of a million dollars, and yet we may be going carelessly along letting this organization be shot to pieces by accidents. We hesitate to hire a safety man who is big enough to do a real safety job purely because we don't want to pay the price for a mature, capable man.

Take a look at your operating sheets and see what your employees' liability insurance is costing you; see what your public liability insurance policies are costing you, and see what your lost time is costing you, and when you get through scanning these figures I think you will be astonished to find that through false economy you are carrying an operating item of considerable proportions of which half or two-thirds, or even more, is absolutely unnecessary. When I look back over what has taken place on some of the jobs with which I have had contact, I am perfectly astounded to think that we did not have enough business judgment to get going years before we did. In glancing over a record of a property employing some 2200 men and just gauging a five-year period, 1929 to 1934, I find that on this property in 1929 we had seven fatalities, and five years later, after an intensive campaign of safety, we had only 2 fatalities. I do not mean that the 2 were justified, but I mean to say that we brought the figure down from 7 to 2 over a period of five years. I find that in 1929, we had 2 permanent disability cases and five years later, in 1934, we had only 1. I find that in 1929, we had 208 temporary disability cases and five years later, in 1934, we had only 24 such cases. I find that in 1929, we lost through disability 3191 days and in 1934 we lost only 197 days. I find in 1929 a frequency record of 22.12 and in 1934 a record of 6.95. I find in 1929 we had a severity record of 5.52 and in 1934 a record of only 3.72. I find that fatalities per 100 employees in 1929, .3, and in 1934 to be .09. Looking at this record from a purely mercenary standpoint, I find that in 1929 we were paying on our operating payroll 2.13 per cent, and in 1935 we were paying only 1.14 per cent. I find that in 1929 we were paying on our construction payroll 2.75 per cent, and in 1935 we are paying only 1.63 per cent. These, gentlemen, are no mean reductions. These figures show you that it pays to study your accidents, to fight them, and to work against them. These figures alone represent between one and two per cent on your payroll, and yet if you were trying to appraise into dollars and full value of this reduction in accidents, you would have to add many other figures to these figures in order to get at the true financial benefit. I do not quote these figures in a boastful way. I do not mean to infer that the records which I have quoted you for 1934 and the rates paid in 1935 are all that they should be. I quote them simply as a basis of comparison.

You asked me what we executives expect of a safety man. We expect a great deal of a safety man. We expect him, through his processes and his efforts, to give us a happy, cheerful, healthy and efficient organization. We expect him to give us tremendous savings on our balance sheet; we expect him to deliver to us a strong endorsement of public opinion, and we expect as a by-product of all these things that he shall relieve us of many, many sleepless nights.

There is just one more thought which I want to leave with you before I close, and that is that the best safety man on earth is not going to get anywhere unless he has the solid backing of the chief executive. This leads to the thought that we expect the safety man to bring to us any troubles which he may be having which he, himself, is not able to untangle. We expect him to report to us any lack of interest on the part of the "higher-ups" in the organization, and we expect him to demand of us that we attend some of his meetings and help him to encourage the organization along the lines that he is working. In our quest for dividends for stockholders I know of no place where we can, without any financial outlay, place one man and bring back more profit to your company than you can by obtaining the right safety director.

PRIZES

to be administered by the

EDISON ELECTRIC INSTITUTE

AND AWARDED IN 1936

PRIZES TO INDIVIDUALS

For Papers on Subjects Relating to the Electric Light and Power Industry

BYLLESBY PRIZE . . . . . *Accounting*

Cash prizes of $100, $50 and $25 donated by Byllesby Engineering and Management Corporation, in memory of Colonel H. M. Byllesby, for the three most meritorious papers on any Accounting subject relating to the Electric Light and Power Industry.

FORBES PRIZE . . . . . *Public Relations*

A cash award of $250 donated by Mr. B. C. Forbes, Editor, Forbes Magazine, for the most meritorious paper dealing with the subject of Public Relations in the Electric Light and Power Industry.

LINDEMANN PRIZE . . . *Electric Cookery*

Cash prizes of $150, $100 and $50 donated by Mr. A. L. Lindemann, Vice President and General Manager, A. J. Lindemann and Hoverson Company, for the three most meritorious papers dealing with the Advantages of Electric Cookery for Domestic Purposes.

McGRAW PRIZE . . . . . *Engineering*

Cash prizes of $250, $150 and $100 donated by Mr. James H. McGraw, Chairman of Board, McGraw-Hill Publishing Company, for the three most meritorious papers on any Engineering or Technical subject relating to the Electric Light and Power Industry.

RULES AND CONDITIONS OF CONTESTS FOR PRIZES TO INDIVIDUALS

Any person employed by an electric light and power company is eligible to enter the competition. No person is eligible to win two years in succession the identical prize or lower prize of the same award, but is eligible for a higher prize of that award. Papers must be the original work of the author or authors, prepared exclusively for this competition. Papers may be of any length, and pen-and-ink drawings or photographs suitable for reproduction may be included. Papers should be typewritten on one side only.

Papers will not be returned to contestants, but will become the property of the Edison Electric Institute and will be available for inspection at the General Offices of the Institute. The right is reserved to publish any paper entered in the contest.

The first page of the manuscript must give the following information: the name of the prize for which the paper is submitted, title of paper, name of author, name and address of employing company, title or character of position and home address. One paper may not be submitted for more than one prize.

PAPERS FOR ABOVE PRIZES MUST BE FORWARDED BY MARCH 1, 1936

PRIZES TO COMPANIES AND INDIVIDUALS

For Accomplishments in Specified Activities

CHARLES A. COFFIN AWARD

Sponsored by the General Electric Company

A Gold Medal, known as the Charles A. Coffin Medal, will be awarded to the public utility operating company within the United States which, during the year 1935, has made a distinguished contribution to the development of electric light and power for the convenience and well being of the public and the benefit of the industry. The company awarded the medal will also receive $1,000 for its employes' benefit or similar fund.

AUGUSTUS D. CURTIS AWARD

Lighting of Buildings

A certificate donated by Mr. Kenneth Curtis, president, Curtis Lighting, Incorporated, in memory of Augustus D. Curtis, the founder and first president of that company, to the public utility operating company within the United States which, during the twelve month period ending March 1, 1936, has shown the greatest contribution to the advancement of Artificial Illumination of interiors or exteriors of Commercial and Public Buildings, and a cash prize of $250 to the individual or individuals in that company responsible for the achievement.

GEORGE A. HUGHES AWARD

Domestic Electric Cookery Load

A trophy donated by Mr. George A. Hughes, President, Edison General Electric Appliance Company, Inc., to the public utility operating company within the United States which, during the year 1935, has shown the greatest contribution to the development of the Domestic Electric Cookery Load through promotion, or selling, or both, and cash prizes totaling $1,000 to the individuals responsible for the achievement.

THOMAS W. MARTIN AWARD

Rural Electrification

A bronze plaque donated by Mr. Thomas W. Martin, President, Alabama Power Company, to the public utility operating company within the United States which, during the year 1935, has shown the greatest contribution to the advancement of Rural Electrification-Agricultural advancement within the company's territory due to uses of electricity, development of rural load, cooperation with other agencies, extension of rural lines, organization and plan for conducting rural electric development.

IMPORTANT—Complete details and registration forms for the Charles A. Coffin Award, the Augustus D. Curtis Award, the George A. Hughes Award, and the Thomas W. Martin Award should be secured from the Secretary, Edison Electric Institute, 420 Lexington Avenue, New York, N. Y.

Elaborate and costly exhibits are unnecessary. The merit of the enterprise presented in papers or exhibits will be the prime factor in determining awards, without regard to the size of competing companies.

PRESENTATIONS OF ACCOMPLISHMENTS MUST BE FORWARDED BY APRIL 1, 1936

Papers and exhibits for 1936 prizes should be addressed to the Secretary, Edison Electric Institute, 420 Lexington Avenue, New York, N. Y. Winners will be announced and prizes awarded at the 1936 Convention of the Edison Electric Institute

PRIZE AWARDS COMMITTEE: Thomas N. McCarter, James E. Davidson, Frank W. Smith, *Chairman*, M. T. Chandler, *Secretary*

Electrical Housewares Week

Big Feature of Electrical Housewares Program

By C. E. Greenwood
Commercial Director, Edison Electric Institute

IN EARLY 1934 it was observed that the market for table cookery appliances had been declining. Small appliances had been taken for granted, and the utilities had passed the business over to other dealers of all classes who had not the same interest in their promotion.

This group is such an important one to the electric utility and to the manufacturers of small appliances, that a committee was formed, of which Mr. D. M. DeBard, Stone & Webster Service Corporation, was Chairman, to take the subject under advisement. The Sales Committee later approved a promotional program on "Table Cookery," which was sponsored by the Edison Electric Institute and a group of leading manufacturers. The slogan—*Electric Table Service Saves*—was widely publicized in newspapers and posters, and the utilities' attention was again directed to the small appliance market.

The success of the first year of operation justified an expansion of the campaign this year under the title, "Electrical Housewares Program." A monthly news medium has been published and 10,000 of each issue has been distributed. Sponsoring the activity jointly with the Edison Institute are twelve electrical manufacturers that contributed financially to the Program. The list includes:

American Electrical Heater Co.
General Electric Company
Hamilton-Beach Mfg. Company
Knapp-Monarch Company
Landers, Frary & Clark
Manning-Bowman & Co.
Proctor & Schwartz Electric Co.
Robeson Rochester Corporation
Swartzbaugh Manufacturing Co.
The Silex Company
Waters-Genter Company
Westinghouse Electric & Mfg. Co.

An outstanding feature of the Program is the inauguration of a National Electrical Housewares Week, the week of December 2nd, which is expected to be established as an annual event. The utilities are being joined by department stores, furniture, hardware and electrical dealers.

A three-color poster has been prepared for the use of dealers in small appliances of which there will be distributed approximately 75,000. This poster will be the nucleus of window and interior store displays of the products of manufacturers contributing to the Program. Six hundred dollars in prizes will be given in three dealer classifications. There will be $100.00 for the first prize, $50.00 for the second, and five honorable mention prizes of $10.00 each in each class.

Supplementing the poster there will be mats available with miniature copies of the poster for newspaper advertising, and also three-colored stickers to use on stationery to publicize Electrical Housewares Week. A special design has been prepared for outdoor posters.

The mats are available at 10c. each, and the colored gummed stickers, 1½ in. high, may be obtained at $1.00 per roll of 1000.

It is of particular interest that the Rocky Mountain Electrical Association, which will carry on its fifth annual campaign of "Give-Something-Electrical-for-Christmas," has joined with the Institute to promote Electrical Housewares Week this year.

President G. B. Buck and Association Manager George E. Lewis, in deciding to combine Electrical Housewares Week with their merchandising campaign, are expecting the greatest holiday trade period ever experienced by the utilities and electrical appliance dealers of Colorado, New Mexico and Wyoming.

Mr. Lewis states:

"Plans are under way to enlist the cooperation of more than 4000 dealers and their staffs and more than 5000 representatives of the utilities, distributors, manufacturers and other interests, so that it is expected more than 10,000 persons in the three states will have an active part in the movement.

"Supplementing the $600.00 in prize money offered by the Edison Electric Institute, for the best window and interior displays in the nation, the Association will award cash and other prizes in every town where three or more dealers enter either the national contest, a regional contest now being arranged, or both. Moreover, various company members of the Association also will contribute prizes. The cash and other awards will have an aggregate value of several thousand dollars.

"The program as now projected embraces many novel features that will serve to direct attention to Electrical Housewares Week and stimulate the purchase of things electrical during that period and the holiday shopping period. Every channel of promotion will be employed to create sales, including radio, newspaper, movie and poster advertising. Dealers will be supplied with promotional material, without cost. Traveling representatives of the distributors will carry the message to all dealers and assist in arranging local contests.

"The activity will be known as the Electrical Jubilee. The program, while a culminating activity for 1935, also constitutes the spear-head for the 1936 load building effort. The program is so set up that, even after Christmas, it extends into the new year.

"One novel feature now being arranged provides a contest at which the participant, upon a picture and set of plans provided for the purpose, indicates how a modern, $16,000 "Cinderella House," now in course of construction—later to be given away—should be electrically equipped. Surrounding the Cinderella House will be twenty-five electrical appliances, which the contestants must properly locate in the home.

"Utilities, dealers and other interests will distribute contest blanks and pamphlets descriptive of the lighting and equipment that such a home requires if it is really modern. These pamphlets will assist contestants in laying out their contest plans.

"Another plan which it is expected will assure the electrical industry a goodly proportion of the Christmas purchasing contemplates the giving away of tickets, by all dealers, for every dollar's worth of merchandise purchased, which will entitle the ticket holders to draw for a series of prizes. These prizes will include refrigerators, radios, laundry equipment and other appliances.

"Another plan that it is believed will insure close to 100 per cent cooperation on the part of all dealers contemplates the awarding of dozens of prizes in the shape of merchandise purchase allowances. Unless all dealers agree to have window or other displays, and to hand out contest blanks, which are so arranged that thousands of prospects are uncovered, they cannot benefit through the purchase allowances or the prospect lists that will be made available.

"Supplementing the posters that will be distributed by the Edison Electric Institute, will be thousands of huge Christmas wreath stickers and attractive banners and hundreds of thousands of small Christmas wreath stickers for use in the mails."

This is the first organized activity of its kind and the national coordination between Edison Electric Institute and the National Electrical Manufacturers Association, and the cooperative tie-in between utilities, wholesalers and dealers of all classes is expected to result in record sales of small appliances as Christmas gifts this coming season.

Kitchen Modernizing Bureau

Plans for First Year's Activity Approved

THE Electric Kitchen Modernizing Bureau became an established fact at a meeting called by Chairman George E. Whitwell on Thursday, November 7, at Cleveland. For some months preparations have been in progress. Appointment of organizational members and the raising of funds for the first year's effort are completed.

The National Electric Kitchen Bureau is sponsored jointly by the Edison Electric Institute and the National Electrical Manufacturers Association. The purpose will be to supervise and coordinate all national activities for the promotion of the All-Electric Kitchen, and to promote local activities designed for the same purpose. It is understood that this will be a sustained program over a three-year period.

Mr. Whitwell announced that the membership of the National Bureau would be made up of three classes—Regional Directors, Members-at-Large, and an Executive Committee. A set of By-Laws was approved and a complete Plan of Activity was presented and accepted. The Plan includes an outline for national management. A Division of the Commercial Department at E.E.I. Headquarters will be set up to operate the Kitchen Modernizing Program and Mr. R. E. Barnes, formerly Assistant to the President of West Penn Electric Company, has been appointed manager. The Secretary of the Bureau is O. C. Small of the staff of N.E.M.A.

The Plan includes a division of the United States in zones each with a Regional Director; and details of organization of local Electric Kitchen Bureaus and methods of coordination and cooperation with the National Bureau in order that they may function most effectively. Representatives of the Bureau will be in the field to aid in organizational work and for presenting the messages of the National Program before local groups.

The publicity and promotional program includes the publication and distribution of Plan Books, a booklet on kitchen plans; preparation of mats for local newspaper advertisement; display material; radio transcriptions and general publicity service.

The Kitchen Modernizing Program will be tied in with the Federal Housing Program on general modernization of the home. A sound film—"The Courage of Kay"—has already been announced in the columns of the BULLETIN and is available as a feature of the Bureau activity.

The Executive Committee of the Bureau is made up of the following:

G. E. WHITWELL, *Chairman*, Philadelphia Electric Co., Philadelphia, Pa.

H. W. BURRITT, Kelvinator Corp., Detroit, Mich.

C. E. GREENWOOD, E.E.I., New York, N. Y. (Advisory).

C. L. HAROLD, Brooklyn Edison Co., Inc., Brooklyn, N. Y.

R. E. IMHOFF, Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

R. B. MARSHALL, Electromaster, Inc., Detroit, Mich.

H. J. MAUGER, Edison General Electric Appliance Co., Chicago, Ill.

(*Continued on next page.*)

L. R. PARKER, Commonwealth and Southern Corp., New York, N. Y.
F. R. PIERCE, Frigidaire Corp., Dayton, Ohio.
P. H. POWERS, West Penn Power Co., Pittsburgh, Pa.
G. J. REICHERT, Buffalo, Niagara & Eastern Power Corp., Buffalo, N. Y.
H. M. SAWYER, American Gas & Electric Co., New York, N. Y.
O. C. SMALL, N.E.M.A. (Advisory), New York, N. Y.
H. F. SMIDDY, Electric Bond & Share Co., New York, N. Y.
C. E. SWARTZBAUGH, Swartzbaugh Manufacturing Co., Toledo, Ohio.
P. B. ZIMMERMAN, General Electric Co., Cleveland, Ohio.

The Regional Directors appointed to date follow:

REGIONAL DIRECTORS (Tentative)

Realignments to be Announced

Tennessee, Alabama
A. W. ASHMEAD, Tennessee Electric Power Co., Chattanooga, Tenn.

Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island
W. C. BELL, New England Power Assn., Boston, Mass.

Oklahoma, Texas, Arkansas, Louisiana, Mississippi
A. A. BROWN, Oklahoma Gas & Electric Co., Oklahoma City, Okla.

Wyoming, Colorado, New Mexico
G. B. BUCK, Public Service Co. of Colorado, Denver, Colo.

Georgia, North Carolina, South Carolina, Virginia
C. A. COLLIER, Georgia Power Co., Atlanta, Ga.

California, Nevada, Arizona
R. E. FISHER, Pacific Gas and Electric Co., San Francisco, Cal.

Wisconsin, Illinois, Indiana
H. A. KEYS, Byllesby Engineering & Management Corp., Chicago, Ill.

Washington, Oregon, Idaho, Montana, Utah
A. C. MCMICKEN, Portland General Electric Co., Portland, Ore.

Nebraska, Missouri, Kansas, Iowa
(To be appointed.)

Michigan
H. H. DAVIS, Consumers Power Co., Jackson, Mich.

Pennsylvania, West Virginia, Maryland, Dist. of Columbia
P. H. POWERS, West Penn Power Co., Pittsburgh, Pa.

New York
G. J. REICHERT, Buffalo, Niagara & Eastern Power Corp., Buffalo, N. Y.

Ohio, Kentucky
H. M. SAWYER, American Gas & Electric Co., New York, N. Y.

Florida
R. J. FITE, JR., Florida Power & Light Co., Miami, Fla.

New Jersey, Delaware
H. P. J. STEINMETZ, Public Service Electric & Gas Co., Newark, N. J.

Minnesota, South Dakota, North Dakota
H. E. YOUNG, Northern States Power Co., Minneapolis, Minn.

Good Eyes — Good Pupils

Is the title of a Sound Slide Film now available for presentation to school children on Light for Seeing.

It is a simple elementary story — entertaining and understandable — that will hold any child's attention. This film is prepared especially for an audience of children ranging in age from 7 to 16 years.

Consists of

50 PICTURES AND ILLUSTRATIONS

15 minutes of helpful advice and constructive suggestions on eye health and care — right and wrong posture — right and wrong ways of reading, writing and studying — eye examination and correction of defects — adequate lighting — proper lighting.

It is a story of interest to School Boards and Teachers, Child Health and Welfare Groups, Parent-Teachers Associations and Women's Clubs, in arranging educational programs for children.

The Slide Film fits any standard type portable projector (35 mm). Sound is recorded on one side of a 16 inch disc suitable for use on any standard portable sound producing apparatus.

The Film may be used without the sound record by reading the written text, though this method is not recommended.

Prices:

FILM ..... $3.00 per print
RECORDS ..... 2.50 each
Mimeographed copies of text – $1.00 each

Produced and distributed by the

National Better Light Better Sight Bureau

420 LEXINGTON AVE. NEW YORK, N. Y.

Endorsed by **Better Vision Institute**

Over 100 Sets of this film have been purchased by Utility Companies since September!

Better Light-Better Sight Goes On the Air

The first of a series of broadcasts on Better Light-Better Sight, sponsored nationally by the General Electric Company over the NBC red network and locally by about 26 utility companies in whose areas the local stations are situated, started on the air Sunday night, October 20. This marks another step in a cooperative effort on the part of the utilities to promote the Better Light-Better Sight Program.

It has been accurately determined during the past two years that the human voice is the most powerful means of telling the Better Light-Better Sight story. Radio seems to offer a mass media for adding to the promotion already under way in magazines, newspapers and direct mail. The title of the broadcast is "The Melody Master."

Although the broadcasting period is at 11 P.M. immediately following the General Motors hour, there will be hundreds of thousands of listeners who will get acquainted with the characters and the drama of the program and extend their going-to-bed hour to listen to the musical program and the interesting but brief factual story that will be given about Light for Seeing.

At the end of each program the local utility uses its own message over its own name.

Through special arrangements, W2XAF, General Electric's short wave station in Schenectady, carried the October 20 "Melody Master" program. Now General Electric is offering a Better Sight lamp to the person who reports having heard that program at the greatest distance from Schenectady. Deadline for letters reporting such reception is December 1st.

A typical "New American" home

Public Shows Tremendous Interest in Completely Electrified "New American" Homes

By J. F. Quinlan

Manager, "New American" Demonstration Home Plan, General Electric Company

COMMENCING the first week in September, and continuing through the month of November, over three hundred and fifteen new houses, completely equipped electrically, are being thrown open to the inspection of a public scattered the length and breadth of this country.

These are the "New American" houses, sponsored by the General Electric Company, and built, however, by various persons and organizations, including private builders, operative builders, dealers—a few have been put up by utilities and newspapers.

The public has shown an avid interest in these houses. In four weeks' time, over one hundred and fifty thousand people passed through the "New American" house in Marblehead, Mass., the first one opened. In the New York area, where twenty-one houses were ready for inspection October 12; in Detroit, where twelve houses were opened; and in Pittsburgh, where some seven houses were shown in the area, unprecedented crowds have visited them. In several instances it was necessary to call upon the police to aid in handling the unexpected rush of visitors.

The significant fact in the above paragraph is the great interest shown by the public in matters pertaining to better housing and the use of electricity in the home.

History of the "New American"

The "New American" plan was the outgrowth of an Architectural Competition sponsored by General Electric. This, in turn, was the outgrowth of independent thinking along the line of better housing on the part of Owen D. Young, chairman of the board; Gerard Swope, president, and T. K. Quinn, vice-president, of General Electric.

Surveys showed it, but the fact was evident without them, that the majority of today's homes are reflections of a standard of American life which was left behind in most advanced sections at least a decade ago.

It was felt that, in some manner, it would be a splendid thing to crystallize the thinking along these lines, and let it be productive of tangible suggestions for home betterment, taking into consideration, of course, the great advance made by electricity in its domestic applications.

Accordingly, the General Electric architectural competition was announced. Through such a competition, expression could be given to all advanced thought of the best architectural minds of the country, having to do with efficient space utilization; planning which would give consideration to the sequence of use of the various rooms; economy of construction; and the best utilization of time and labor saving electrical equipment.

Five thousand seven hundred architects and designers entered the competition and two thousand and forty designs were submitted. From this bewildering mass of plans and elevations fifty-two were selected as the most meritorious, and the prizes awarded, following the rules of the competition.

General Electric found itself possessor of a remarkable collection of house plans, all embodying the latest in modern thought and architectural ingenuity.

The next problem was: How best can these plans be utilized to bring to public attention the advances made in home planning and design embodied in them.

The solution of this was the General Electric "New American" building project. The company did not propose to build houses. However, by allowing its distributors and dealers to give substantial discounts on its electrical equipment for the home which was specified the company sought to stimulate the erection of "New American" houses in all sections of the country. An organization was set up to promote this project. The three hundred and fifteen "New American" houses which have been built since attest to the appeal of the idea.

What Is "New American?"

In the definition of the rules of the Architectural competition, given for the guidance of the architects entering, great stress was laid on the idea of designing the house, not from the standpoint of its external appearance, but making its livability the major consideration. Instead of commencing with a pretty picture of an Early American cottage, a Mediterranean villa, a Tudor manor—or whatever style presented itself to the architect's fancy; the first step in the planning should be taken inside the projected house. Above all, it should be scientifically laid out, not only to conserve space, but to utilize all space; to make dual use of space where possible; and, to equip it with every electrical device which would cut the labor of maintenance and the drudgery of housekeeping to an irreducible minimum. Primarily, it was to be a house to live in, rather than a house to look at. When the interior planning was complete, the exterior could follow the architect's fancy or the builder's whim.

From this competition came a distinctly new style of home planning. A name had to be found for it. Someone happily called it the "New American," and so it has remained.

So—despite the fact that "New American" has been confounded in the minds of a few with the modern, rectangular, flat-roof style of architecture—the real meaning and significance of this term is: A house wherein the interior would be planned before the exterior was designed; a house which would be efficient from every standpoint; a house which would be completely equipped with electric cooking, dishwashing, refrigeration, air conditioning, cleaning and laundry appliances, in a word, one which would have every modern electric device that could contribute to the health, convenience and comfort of those who lived in it, and, at the same time, give them additional hours of leisure.

MR. QUINLAN

Not Model Homes

The "New American" houses which have been built throughout the country are full sized, practicable houses, ready to live in. In most instances, after the demonstration period comes to a close, families are moving in—the houses then become homes.

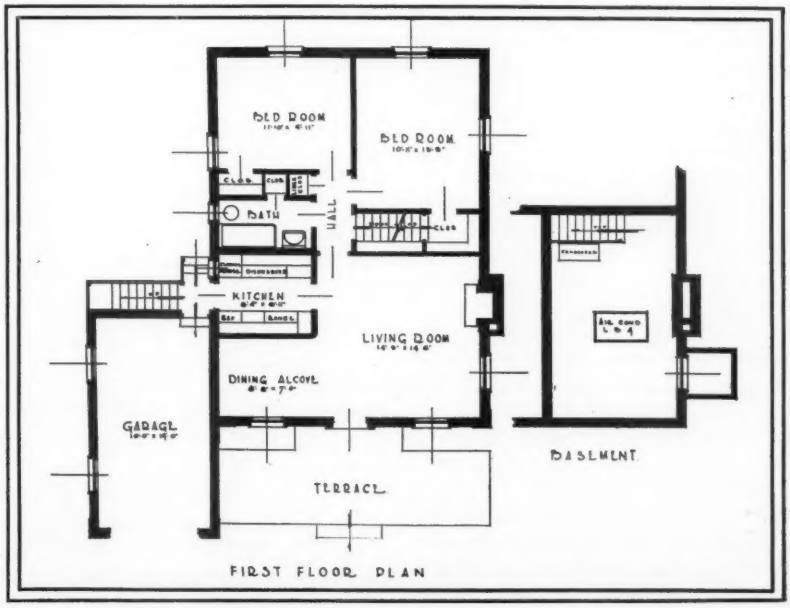
A Typical "New American"

Let us describe a typical "New American"—the house erected at Wantagh, L. I., built by Alfred L. Hart, General Electric dealer. This house follows Plan No. 20 in the "New American" program. The architects were the firm of Walker & Gilette.

This house was planned to come within a construction cost of $5,500, exclusive of lot and cost of landscaping. It has complete summer and winter air conditioning, a complete electric kitchen, highest grade wiring, and all other essential electrical equipment to make it "New American."

It was designed to fit the activities of an average family in the lower income brackets. Herein is one of the important features of the "New American" idea: It brings to those of moderate income all of the comfort and convenience, hitherto regarded only as a concomitance of great wealth.

The house contains a living room, a dining alcove, a master's bedroom, a child's bedroom, kitchen and bath. The garage is attached to the house. There is a basement in which are housed the oil heater and air conditioning apparatus. Placed in the center of the house, this air conditioning unit feeds the rooms directly by overhead flues. This naturally reduces the cost of construction and operation. In winter, through



Floor plan of a typical "New American" home

ducts, the warm air is carried to the various rooms; in summer, through the same ducts, cooled air flows, which keeps the house comfortable, regardless of the external heat.

Instead of chandeliers, the rooms are illuminated by sunken ceiling lights with lumline lighting. The long, cylindrical bulbs concentrate the light in cones of brillance.

Durable, easily cleaned, cork floors are used, which deaden footfalls and absorb sound.

Windows are placed scientifically to provide light where it is needed and take up the least amount of wall space.

This house contains eighty per cent of usable space, as contrasted with an average of sixty-five per cent in older houses.

In many "New American" houses, glass bricks are being used to form the rear wall, thus permitting the entrance of light and sunshine, which in turn, contributes to the health of the occupants.

In the complete electric kitchen are the range, the refrigerator, the dishwasher, as well as smaller appliances such as the mixer, the ventilating fan, etc.

In the dining alcove are sufficient outlets for small table appliances, toasters, waffle irons, coffee makers.

In the bathroom is a health lamp, which supplies the equivalent of sunshine when days are grey.

From the Angle of Load Building

From the standpoint of the utility, interested in building up its domestic load, there is probably no contribution of greater value in stimulating the more wide use of electric current than these "New American" homes. It is realized that only a small proportion of the millions who will have viewed and inspected the three hundred and fifteen "New American" homes throughout the country will build a similar house immediately. However, when they do build, they will not be satisfied with the old methods, either of building or of equipping. Furthermore, when these people return to their homes, they will see their familiar dwellings in a new light; the deficiencies of their present houses will be contrasted with the efficiencies of the "New American."

This means the stimulation of modernization; the purchase and use of new electrical appliances, and, as a consequence, the greater consumption of electricity.

"Don't think I'll bother about breakfast, dear."

The Courage of Kay

A four-reel talking picture featuring kitchen modernization

"The Courage of Kay" is a four-reel sound film which unfolds in forty minutes an absorbing little drama of home life. The picture will be viewed by people everywhere with pleasurable interest. It carries a very practical kitchen message to women in particular and leaves a vivid impression of how one woman, who was handicapped by an inadequate kitchen, overcame that difficulty by modernizing and installing electric equipment with the aid of a Federal Housing insured loan. In doing this she established a new plane of living and efficiency in home-making.

Inevitably each person who views this film will begin to think in terms of modernization for his or her kitchen.

"The Courage of Kay" was created to bring more effectively to the women of America a new, broad interest in kitchen modernization in all its aspects, and present the opportunity The National Housing Act offers for immediate action. The film was produced with the intention of offering it at modest cost or rental to any reputable company or group which will arrange to have it displayed to local audiences. Those concerned, for business or other reasons, in any phase of kitchen modernization and home improvement will wish this film to be exhibited and, it is hoped, will cooperate in getting the picture shown locally. Such interested groups include central stations, electric leagues or clubs, manufacturers, wholesalers, contractors and many others.

Although the main theme of the picture is kitchen modernization with electrical equipment, the products of non-electrical manufacturers, who defrayed the considerable cost of producing the film, are mentioned. In each case, mention of such product is brief and so incorporated in the film as not to interrupt the action or interest.

Cast and Direction

This film was produced in Hollywood by Mason Wadsworth. The script is by Phillip Hurn whose most recent presentation, "Wings in the Dark," was enthusiastically received. The production was supervised by the well-known director, Hobart Brownell. The all-Hollywood cast is as follows:—

Kay Harper, *a young matron* . . . Lois Wilson

Bob Harper, *household editor of the local newspaper* . . . . . Lloyd Hughes

Home Service Representative of the utility company . . . . . Muriel Evans

Howard Greenlee, *meek-spirited publisher of the town newspaper* . . . Arthur Hoyt

Daisy Greenlee, *the publisher's strong-minded wife* . . . . . Claire McDowell

Uncle Harry, *Bob's tight-fisted uncle* . . . . . Carl Stockdale

A supporting cast of well-known actors.

"H-m-m. I've heard of this National Housing Act."

How You Can Obtain This Motion Picture

Prints may be purchased or rented at a price which no more than covers the cost of making and distributing the print.

There are several ways in which the film may be shown in your community. For little expense, it may be exhibited at special morning performances in local theatres with no admission charge. Theatre managers may gladly cooperate to help promote the Federal Housing Program. Utilities, electrical manufacturers, distributors of advertised products, and all their dealers, will be eager for showings.

If showing in a local theatre is not feasible, the film may be exhibited to special groups at the utility company auditoriums, at cooking schools, at parent-teacher, women's clubs or other meetings.

Special promotional tie-ups may be worked out locally and suggestions for such plans are available upon request.

Rental of Film

	per wk.
16 m.m. (non-flammable)	$ 12.00
35 m.m. (flammable, for use in regular motion picture theatres)	20.00
35 m.m. (non-flammable, for use in other than motion picture theatres)	30.00

Purchase of Film

16 m.m. (non-flammable)	$ 69.00
35 m.m. (flammable, for use in regular motion picture theatres)	110.00
35 m.m. (non-flammable, for use in other than motion picture theatres)	150.00

Orders for film or for projection service or for further information on any point may be addressed to any of the following

MASON WADSWORTH
551 Fifth Avenue
New York City

or

EDISON ELECTRIC INSTITUTE
420 Lexington Avenue
New York City

or

FEDERAL HOUSING ADMINISTRATION
Motion Picture Unit
Washington, D. C.

Accident Prevention Committee Meeting

W. A. Buchanan, *Chairman*

THE third meeting of the Accident Prevention Committee was held at the Brown Hotel in Louisville, Ky., on October 14th, during the 24th Annual Congress of the National Safety Council. All but two of the members of the Committee were present.

A report prepared by Mr. W. R. Smith was presented by Mr. Kropp. This dealt with the cooperation of the Accident Prevention Committee with the following groups that are interested in safety and accident prevention work:

American Institute of Electrical Engineers.
American Institute of Mining and Metallurgical Engineers.
American Society of Civil Engineers.
American Society of Mechanical Engineers.
American Institute of Chemical Engineers.
Illuminating Engineering Society.
The Society of Automotive Engineers.

Each of these organizations have or intend to have a representative designated with whom Mr. Smith can contact on matters of mutual interest.

Mr. C. R. Beardsley reported on the accident statistics that had been received from electric light and power companies for the year 1934. From these statistics, ratios for 1934 have been obtained which show that the Days Lost per 100 Employees per Year dropped from 53 in 1933 to 48 in 1934; the Lost Time Accidents per 100 Employees per Year dropped from 2.14 in 1933 to 2.03 in 1934 and the Fatalities per 1000 Employees per Year remained practically constant, raising slightly from .66 in 1933 to .67 in 1934. An effort is being made by the Accident Prevention Committee to work more closely with operating companies with a view to their adopting more uniform and effective methods for education of employees and the supervision by foremen. It is believed that this will be effective in a still further reduction of accidents and fatalities.

A great deal of discussion was given over to the subject of Cause and Locus which is under the sponsorship of Mr. Beardsley. The object of this study is to analyze and classify accident data and statistics with a view to determining the proportion of accidents that are occurring in the various fields of activity of construction, operation and maintenance. When definite information of this nature is available, it is then planned to advise other committees dealing with engineering phases of the industry in order that they may take safety and accident prevention into account. In an effort to collect Cause and Locus data, it is planned to enlist the support and assistance of members of the Committee and others interested in accident prevention in various sections of the country and ask these people to report such data from their respective sections. A form has been prepared which will be used in this study and should result in all data being received on a uniform basis.

It was brought out that some confusion is resulting because there is no definition of the term "Employee-Exposure" which is used uniformly among companies. To correct this situation it was decided to adopt the following definitions:

1. Employees shall be only those persons on company payrolls.

2. Basis of exposure shall be obtained as follows (or by a method which will obtain equivalent result).

(a) Record total number of "employee man-hours" worked each week.

(b) Divide total hours by 40 hours for (5) 8-hour day week. (Whether or not the standard week is 5 or 5½ days.) The result may be termed the number of "employee-weeks."

(c) Total the "employee-weeks" for 52 weeks. Divide by 52. The result is the exposure in "employee-years." This may differ from the average number of individuals in so far as overtime, sick absence, holidays, vacations, part time employees, etc., may affect the totals.

(d) This calculation should eliminate the variations of any cause whatsoever and use the standard employee year of 2080 hours. If vacations and holidays reduce the actual hours of exposure in a given week, division by 40 hours results in a number of employees smaller than the number of individuals on the roll, but giving a unit of exposure equal to one employee-week of 40 hours. If normal hours worked per week exceeds 40 the result in employee-weeks may exceed the actual number of individuals engaged and listed on payrolls but the figure is still an index of exposure in man-weeks of 40 hours' duration.

3. The definition for annual questionnaire blank is:

"An employee-year shall be 2080 hours (52 x 40 hours)." The exposure index of employees shall be the total man-hours worked during the year divided by 2080.

A bibliography is under process of preparation which will include references to all literature and published information on safety and accident prevention. This is being prepared through library research and an effort will be made to avoid duplicate references and references to articles that have been superseded by more recent information will be omitted.

A report was made covering the proposed report on Grounding which is in the course of preparation by a joint committee of the Accident Prevention Committee, Electrical Equipment Committee and the Transmission and Distribution Committee. The work of this joint committee has been subdivided into several groups, each of which is now working on material which will be subject to correlation and editing by the joint committee. One of the subgroups of this committee, consisting of representatives from the Accident Prevention and Transmission and Distribution Committees, is preparing a section on Temporary Grounding. The first draft of this section is practically completed and will be distributed to the Accident Prevention Committee members for comment in the near future.

Mr. Beardsley made a brief report on the study of the subject of Interlocking and Holdoff. This is also being given consideration by the other technical committees dealing with the engineering subjects as it was pointed out that this practice is not only applicable to the operation and maintenance of transmission and distribution lines, but to steam and hydraulic operations as well. The plan is to prepare acceptable principles which can be used as a basis by operating companies in preparing practices that will be suitable and adaptable to their respective systems.

In a discussion on Public Safety, which is under the sponsorship of Mr. H. J. Burton, considerable was said with regard to the so-called electrified fence. In this discussion there was a strong feeling that any device which is intended to utilize electric current for energizing fences to make them effective by electric shocks to livestock, should not be used. The members of this Committee felt that there is a likelihood that should a device of this kind be used, it will be by-passed by jumpers or otherwise when out of order and thus put 110 volt current directly on the fence. This is definitely a hazardous situation. Mention was made of the article in the July E.E.I. BULLETIN on "Electric

Fences and approval was expressed of the warning which this article contained.

Mr. Wills Maclachlan reported on various phases of Employee Health, mentioning certain safe practice pamphlets issued by the National Safety Council in which this Committee is interested. There was considerable discussion on a new proposed method of resuscitation known as the Holger-Nielsen Method which has been developed in Denmark and has been considered by several groups in this country interested in resuscitation methods. Mr. Maclachlan said that he had investigated this method thoroughly and had made tests to compare the efficiency of the Danish Method with the Schaefer Prone Pressure Method. The following resolution was adopted by the Committee:

"Whereas, a discussion and demonstration of the Holger-Nielsen Method of resuscitation was carried out, this committee formally endorses again its belief in the teaching of the importance of standard technique of getting respiration based upon the work of the Schaefer Method formally adopted in 1927."

There was a discussion regarding Employee Health, in which it was pointed out that more attention should be given to this subject than it has received in the past. A representative of one of the large power companies said, that based on 1934 records, the cost of lost time due to employee illness was 17 times as great as the cost of lost time due to accidents. Several others who had comparable data for their companies, substantiated this high ratio.

Mr. E. W. Gorry reported on low voltage hazards. Several specific cases were described in detail and their causes discussed. No report containing statistics was submitted, but it is hoped that these data can be analyzed and a summary made at the next meeting.

The pamphlets, "Common Sense and Electricity" and "Do You Know," which were prepared by the Accident Prevention Committee of the former N.E.L.A. several years ago, were discussed. These have had wide distribution, the former among homes and the latter to industrial plants and employees. It was decided that these two pamphlets should be reconsidered in the light of subsequent information on the low voltage hazard problem and if necessary, rewritten to suit present-day conditions. It was decided that this Committee would recommend a wide distribution by member companies of these two pamphlets.

The subject of Office Hazards, under the sponsorship of Mr. E. R. Kropp, is one of the new subjects that have been undertaken by the Accident Prevention Committee. Mr. Kropp explained that a letter had been prepared to be sent to the Safety Supervisors of member companies over Chairman Buchanan's signature, calling attention to the need for looking into this subject in their respective companies.

Several other items were discussed briefly and brief reports were made by the contact members of the other E.E.I. committees.

It was tentatively decided that the next meeting of the Committee would be held some time in January, subject to final arrangements to be announced by the chairman.

Prime Movers Committee Meeting

P. W. Thompson, *Chairman*

A WELL-ATTENDED meeting of the Prime Movers Committee was held at Washington, D. C., on October 14 and 15, 1935. Arrangements for the meeting were made by the Potomac Electric Power Company and on the afternoon of the 15th the committee visited the Buzzard Point Station of that company. In the course of the meeting, a brief description of the plant was presented by Messrs. Thielscher and Clerk and values of .51 sq. ft. and 42.8 cu. ft. per kw (based on 70,000 kw) were reported.

Mr. Thompson told of trouble, experienced during the fabrication of boiler drums, in the form of cracks extending clear through the 4 in. plates from which the drums were formed. Professor White, who had investigated this matter, reported that the trouble was due to rolling of the plates at too low a temperature which resulted in the formation of a banded structure. This condition was not brought out by the A.S.T.M. standard bend test which is conducted on a specimen only 1½ in. in width. It was urged to the committee that the standard bend test should be revised so as to take account of this situation in the case of relatively thick plates and that possibly a width of double the thickness should be specified. The Boiler Committee is to solicit experience of the boiler manufacturers in regard to the bend test.

Professor White reported discrepancies found between tests of samples cut from steel valve body castings and those cut from separately cast bars poured for test purposes from the same melt. He stated that in the case of the former, values of elongation and reduction in area were found to be in general about half those obtained from the separately cast bars. However, the products of two casting producers were found to show much better agreement than cited above, which made Professor White express the belief that by the use of slightly less rigid requirements, say 18 per cent elongation and 30 per cent reduction in area, it would be possible to test samples taken from the product itself, which, contrary to the present practice, will assure the tests being representative of the material in the casting.

Mr. Fellows reported continuation of the studies of the Chemists' Subcommittee, particularly in the fields of feedwater treatment and turbine lubrication. The subject of pretreatment of coal was discussed, mention being made of washing and of oil spraying, although no facts of any consequence were available.

A report was submitted by Mr. Clark on the subject of the superposition of high-pressure plants on existing plants and, following its discussion, this report was accepted and referred to the Editing Committee.

The subject of the Boiler Committee report, which is in preparation, brought out a number of discussions. Experience with welded tubes indicates that pin hole leaks are characteristic of failure when it occurs on these tubes rather than open rupture as is the case with lap welded tubes. Mr. Hopping reported such pin hole leaks on welded tubes which had been in service about one year. Mr. Penniman referred to difficulties of rolling-in welded tubes and of using tube cleaners through them, due to the presence of a slight fin left on the interior by the welding process.

Mr. Thompson reported very satisfactory operating results from the use of integral type soot blowers. Some difficulties were reported from the building up of dust on slag screen tubes in pulverized fuel furnaces.

In connection with discussion of material for the Combustion Subcommittee Report, Mr. Thompson stated that ex-

perience at Connors Creek and at Beacon Street with automatic and manual zoned air control respectively indicated a preference for the automatic control. It was his opinion that water cooling of the stoker was unnecessary for 400 F. preheated air operation, based on the very successful operation of the new Connors Creek stokers.

Mention was made of very satisfactory use of Magnaflux dust testing to detect cracks in turbine blading. The use of sprayed kerosene and dust for this work was also reported favorably.

The operation of industrial plants in parallel with utility systems was reported as being quite common and usually desirable.

Hydraulic Power Committee Meeting

C. F. Merriam, *Chairman*

THE Hydraulic Power Committee held its first meeting of the administrative year in Washington, D. C., October 13th and 14th. This meeting also included two inspection trips of considerable interest. The first of these inspections was made at the Hydraulic Laboratory of the Newport News Shipbuilding and Dry Dock Company on Saturday, October 12th, by arrangement among such of the members as could attend on that date. A number of extraordinary demonstrations were made of unusual equipment, including a demonstration of cavitation of a propeller runner in a model with a section of glass draft tube. The various aspects of the cloud of vapor could clearly be seen by viewing through a stroboscope as conditions producing cavitation changed. Another interesting exhibit was the new self-adjusting propeller turbine which is being developed by this company; a working model was in actual operation in the main flume of the laboratory, arranged with a standard hydraulic governor to simulate actual conditions in a power plant.

On Monday, October 14th, at the conclusion of the regular sessions of the committee, a meeting was held at the Bureau of Standards where, through the kindness of the Director, Doctor Lyman J. Briggs, an inspection was made of the research in progress at the National Hydraulic Laboratory. In addition, four short papers were presented by members of the Bureau staff, dealing with the hydraulic research in progress at the National Hydraulic Laboratory. These brief addresses dealt with the part that the Laboratory is playing in coordinating research results from all parts of the country, the rating of current meters where high precision is required, and tests on flashboards made for the Forest Service of the Department of Agriculture. A flashboard failure was demonstrated in the laboratory and there was opportunity to see other work in progress and to discuss the operation of the apparatus with the individual investigators.

The principal technical sessions were held on Sunday, October 13th, at the Shoreham Hotel. Among the subjects discussed was the matter of pressure pipe welding which received considerable attention on account of a recent failure. The Committee felt that considerable study should be given to the question of the procedure to be adopted in the welding of important water conduits. The subject of penstocks was reviewed in the light of the large mass of material which had previously been prepared for publication, but which has not been printed. The Committee proposes to go over this material carefully, to make certain changes to bring it up to date, add new material, and eventually to offer a new report for publication.

The progress that has been made on the welding of pitted runners was reported on extensively, and the discussion included a report on an elaborate series of tests which have been made to determine the characteristics of cavitation resistant material. Considerable discussion centered upon the operation and experience with spillway gates, particularly in adverse climatic conditions which cause difficulties, as from freezing.

A discussion of the dissipation of energy at the toe of dams developed that there are two outstanding methods of accomplishing the desired result. One of these consists in the dissipation of the energy by the use of baffles and the other is to throw the water in a solid jet as far as possible away from the dam, thus concentrating erosion at a safe distance. The discussion revealed that there appeared to be applications for both methods of handling the problem, but as yet there remains considerable difference of opinion as to which is the best method for a given set of conditions.

A résumé of a thorough report on fishways was presented by a member who reviewed the situation as it exists in most of the States of the Union. It was noted that even the successful operation of a fishway may lead to undesirable consequences, some power companies having been requested to discontinue the use of their fishways because of these bad effects.

The final subject discussed at the meeting was that of draft tubes which has heretofore occupied a great deal of attention on the part of the Hydraulic Power Committee and its predecessors. A concluding feature of this discussion was the showing of four reels of moving pictures lent by Mr. Howard L. Cooper, U. S. Engineering Department, 2nd District, dealing with the experiments that he made with transparent models of draft tubes and intakes.

Index of Hearings on Public Utility Act

A comprehensive index of the hearings on the Public Utility Act of 1935 is now being made by the Indexing Service Company and will be available shortly. It will include:

1. A detailed index of the hearings on the Holding Company Bill in the House of Representatives and in the Senate.
2. An index of the debates on the Holding Company Bill as reported in the Congressional Record.
3. A list of the publications and magazine articles on the subject.
4. A chronological record of the Public Utility Holding Company Bill.

Preparation of the index is under the direction of an economist familiar with the public utility industry, and a specialist in indexing who was formerly connected with the National Electric Light Association. This work is a preliminary step in a study which will bring together and analyze the related material presented at the hearings.

In the hearings on the Act are found the views of leading utility executives, economists, and government officials, presented against a background of the latest statistical evidence.

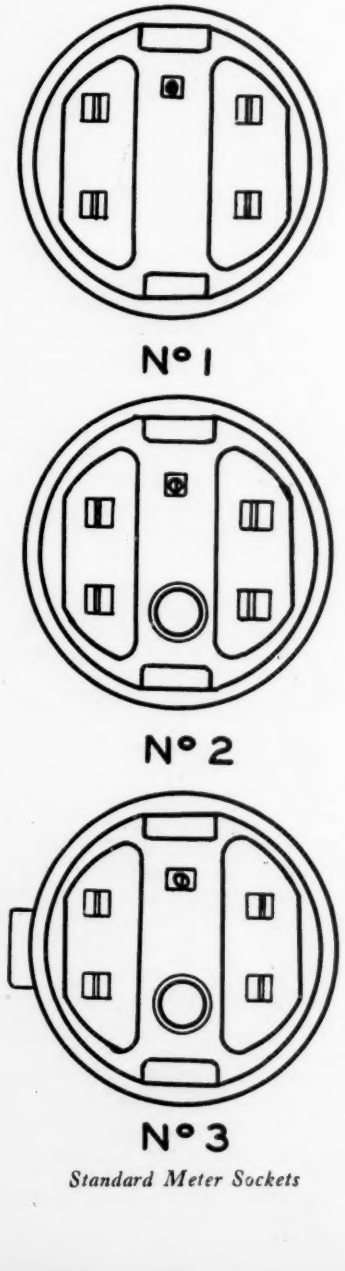
The index may be obtained from the Indexing Service Company, 37-45 74th Street, Jackson Heights, New York, at $25 per copy.

Standardization of Details in Meter Mounting

AS a result of continuing the work of the Meter and Service Subcommittee (of the Electrical Equipment Committee) with the Meter Manufacturers, three standard sockets for type "S" (Socket Type) meters are now listed. This step in standardization effects further simplification, as many as 90 different sockets having been listed heretofore.

The standard sockets now listed are:

1. Single socket with two vertical openings.
2. Single socket with two vertical openings and one back breakout.
3. Single socket with two vertical openings, one side opening, and one back breakout.



Standard Meter Sockets

All standard sockets will be provided with 1" openings, top, bottom or side, and back breakouts will be concentric ¾" and 1".

The No. 1 and No. 2 will be supplied at the same minimum price. The No. 3, at a slightly higher price. All sockets will be supplied for mounting horizontal instead of vertical for a small additional charge. Three-quarter inch and one and one-quarter inch openings may also be had on all sockets for a small additional charge. One and one-quarter inch openings are the maximum that can be supplied in single sockets. A trough or channel type with ring sockets will be available for services requiring larger conduits.

In this connection it is probably also advisable to reiterate the status on the previously worked out Meter Mounting Standards. There are now available from all meter manufacturers two standard (as to mounting) house type meters.

Type "A," a bottom connected meter interchangeable as to mounting among all manufacturers.

Type "S," a socket type meter interchangeable as to mounting among all manufacturers.

There has been no attempt as yet to standardize on a mounting device or inclosure for the type "A" since it is interchangeable with most of the older bottom connected meters and there are a number of satisfactory devices available.

Standardization is a very useful vehicle when properly used. It is the guide which enables those with common problems to get together, tends to concentrate development, save wasted efforts on diversified ideas, and tends to increase production and lower costs.

The Operating Companies should make a serious effort to apply these standards; it will be of material benefit to them and to others who are following these standards as well as the manufacturer.

Rate Savings vs. Taxes

By Arthur Huntington

From the *Front Line*, Cedar Rapids, Iowa

A WASHINGTON news item reads: "An annual saving of $60,000,000 to customers of electric utilities in reduced rates was reported Sunday by the Federal Power Commission."

The article seemed to convey the idea that this saving was a gift from the power commission to the people. The facts are that the rate reductions are a part of a general rate policy of the whole electric industry extending over a period of fifty years.

Perhaps this news item is just a blind to make people forget some of the things they are getting from their lawmakers.

In the same paper there was an item under a Des Moines date line which reads:

"The average person during the first year of the sales tax paid $4.56 in penny taxes, making the average yearly cost to the head of the family around $18.00—the year's total receipts from penny taxes for Iowa being $11,267,682.00."

An editorial reads:

"A man who smokes a package of cigarettes per day pays $29.20 per year in taxes."

The company has just retired one of its cars which has been run about 90,000 miles. This car has paid a license (tax) each year of upwards of $20.00 but that has been only a minor portion of the taxes paid. This car has used upwards of 6,000 gallons of gasoline on which about $240.00 was paid in "penny" gas tax. This is no part of the penny sales tax referred to above.

Let us compare this alleged "gift from the Federal Power Commission" to the people, with just these three taxes which the politicians have foisted on the unsuspecting people.

Of this $60,000,000, Iowa's 460,765 customers (1932 Federal census figures) received about a million and a quarter or $2.72 per residence consumer. To offset this saving, there was an added tax of more than $1.50 to each domestic bill, which the company is forced to collect from the customers for the lawmakers.

How do these new taxes compare with the average residence electric bill?

The sales tax collects about $18.00 per year from each family, whether it uses electric lights or not. The package a day cigarette smoker pays $29.20 and the average automobile owner paid in excess of $32.00 per year in gas tax in 1934, while the average residential electric bill on the property of the Iowa Electric Light and Power Company was $30.66.

Perhaps we should not mention it, but from March, 1933, to March, 1935, the increase in the grocery bill in the average family was five times as much as the total residential electric bill.

McGraw Prize Paper

Apportionment of Load Among Dissimilar Units

Turbine-Generators—Central Stations

PART II

By George G. Guthrie
Junior Engineer, Detroit Edison Company

General Theory

Plant heat rate curves plotted against plant load for two or more plants would be the starting point for determining the division of system load. The general theory of Part I would apply precisely to this problem of determining how much load each plant should carry. As was evident in that discussion, the curves of rate of change of plant heat consumption provide the most workable means of finding the apportionment of load among several plants.

One of the main differences in the straight application of the theory exists when one or more of the plants is remote from the system load center and supplying all or some of its output over a high tension transmission line. A method of attack for this condition is shown in Figure 10. The curves of rate of change of heat consumption for plant A with one machine running and with two machines running (marked A-2m) are shown. Assume that plant A is remote from the general area comprising the system load but supplies a part of the total system load locally at or near the station, while the rest of its output is sent out over a transmission line. At a total system load of 130,000 kw, for example, the zero ordinate of the reversed rate of change curve B′ of plant B is located. In this position the curves of each plant intersect at the point 1 and show a trial division of load as 88,500 kw on plant A and 41,500 kw on plant B. If, for example, 28,500 kw of the total system load is supplied locally from plant A, then the transmission line must deliver 60,000 kw at its load end. Figure 11 shows a diagram containing a family of circles of constant power loss in the transmission line plotted in terms of the load end power and reactive kva supplied by the line. This diagram could have been calculated from design data of the line including the step-up and step-down transformers at the generating and load end, respectively, but in the case of a simple line not involving parallel circuits and intermediate load step-down substations, it should be possible to accumulate the necessary data from actual measurements. Returning to the example at hand, when the transmission line is supplying a load of 60,000 kw at, say, 80 per cent power factor, the loss indicated at point 1 in Figure 11 is 6,000 kw. The generating stations must make up a loss of somewhere near this amount and thus the combined generated load would be about 6,000 kw more than the system load. In Figure 10 a second trial is then made with this 6,000 kw added to the total system load. The zero ordinate of B′ is placed at 136,000 kw and the rate of change curves are seen to intersect at point 2, indicating a load of 92,500 kw on plant A and 43,500 kw on plant B. Deducting the 28,500 kw of local load at plant A, the transmission line would be called upon to deliver at the load end 130,000 — 43,500 — 28,500 kw or 58,000 kw. Assuming the same 80 per cent power factor for that portion of the system load supplied by the transmission line, Figure 11 shows a loss of 5,800 kw at point 2. This makes an error of 6,000 — 5,800 kw or 200 kw so that to be more exact, plant A would generate 92,300 kw and plant B 43,500 kw. At point 3 on the combined rate of change curve A + B would be plotted opposite 2 at 130,000 kw. Under some circumstances the error of the second trial may be sufficiently large to justify repeating the procedure in a third trial. When no local load is supplied near plant A, the procedure is the same except that no deduction is made from the trial load apportionment to find the power supplied by the transmission line.

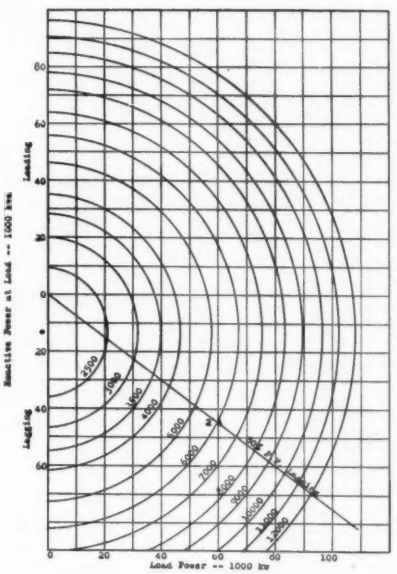


Fig. 11—Transmission Line Loss Circles

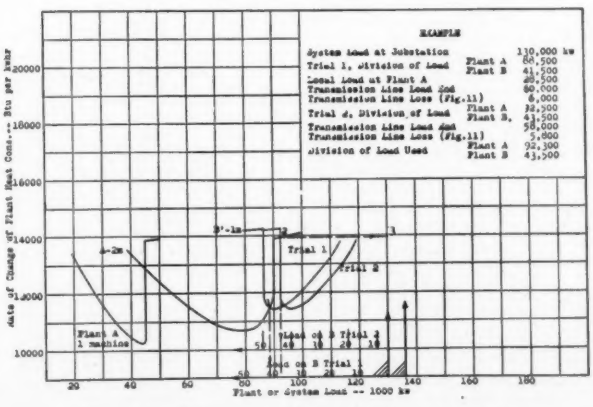


Fig. 10—Effect of Transmission Line Loss

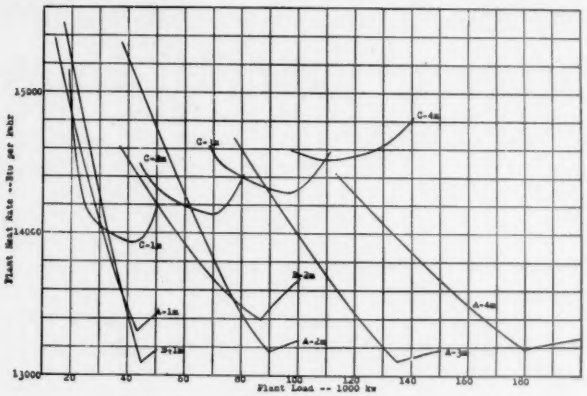


Fig. 12—Plant Heat Rate

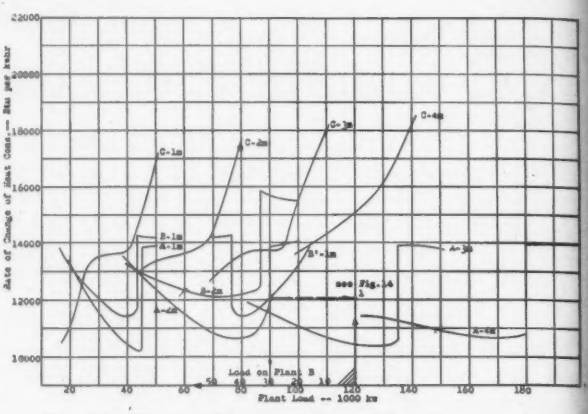


Fig. 13—Rate of Change of Plant Heat Consumption

If plant B had been the remotely located station, the only difference in handling the example would have been in deducting its local load from its first trial load instead of from the trial load of plant A.

The foregoing example is, of course, a simple case. When several transmission lines are supplied by a station and some load is tapped off at intermediate points or if two or more stations feed into a transmission belt line or network, it would, of course, be desirable to reduce the problem to a single equivalent line. It may be observed from the example that the transmission line loss was not added to the remote station heat rate but was treated as a floating loss, thus not penalizing a station for something over which it has no control.

To complete the exemplification, as was done in Part I, an illustration of load apportionment among three typical steam plants will now be covered briefly.

Method of Application

Figure 12 shows plant heat rate curves of three plants A, B and C with indications as to how many machines are in combination at each plant. To be strictly correct the load scale should be in terms of net load at a corresponding metering point for each station either including or not including the step-up transformers. These curves would be obtained by the measured coal, Btu, and other quantities or if the proper data have been compiled could be built up synthetically from the turbine-generator energy rate curves of Part I, adjusted to actual expected throttle steam pressure and temperature, plus miscellaneous plant energy rate curves.

The method followed in Part I for obtaining the rate of change curves from the energy rate curves by the arithmetical difference of the energy consumption at even values of load when applied with the plant heat rate curves of Figure 12, gives the curves of rate of change of plant heat consumption shown in Figure 13. These rate of change curves could likewise have been obtained synthetically by adding the rate of change curves of the machines to the rate of change curves of the plant miscellaneous energy consumption because the derivative of a sum is equal to the sum of the individual derivatives.

It may not be considered out of place to comment briefly on what is meant by system load in this discussion. In general, it is probably not necessary to consider losses within a distribution system because the system is probably designed with relation to the capacity of the several generating stations. A decided unbalance in order to load up one or more plants relatively high compared to the others would be attended by an opposing loss in efficiency in the distribution system. Therefore, it seems exact enough for the purpose to consider the system load as measured at the primary feeder bus of the substations nearest the generating plants.

In using the rate of change curves of Figure 13 to find the division of load between two plants, machines would be added in the order of decreasing economy in determining the plant heat rate of the combination. For practical reasons, no station of the three would be voluntarily let out of service at low system loads so the minimum number of machines in combination at low system load would be the most efficient one at each of the three plants, A, B and C. Figure 14 shows the combined rate of change curves determined from Figure 13 by means of the transparent reversed curves selected in the order of decreasing economy. Applying the procedure of

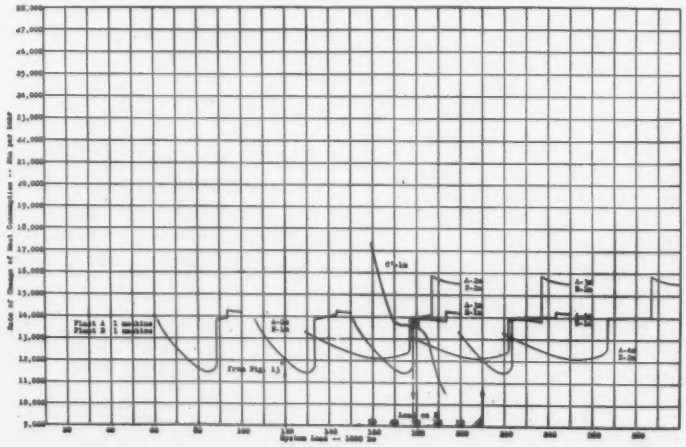


Fig. 14—Rate of Change of Plant Heat Consumption

Part I, the combined plant heat rate curves shown in Figure 15 result. Applying the principle of the order of decreasing economy sometimes results in a close decision as may be observed by comparing the combined heat rate curve for plant A, 3 machines; plant B, 2 machines; Plant C, 1 machine; with the combined heat rate curve for plant A, 4 machines; plant B, 1 machine; plant C, 1 machine.

For the reasons given in Part I, dividing the year into zones of circulating water temperature range would be just as desirable for the plant heat rate curves. Figure 15 would reflect the effect of such zoning in the values for the combined heat rate curves and in the location of the ideal change points, thus influencing the time of starting up or shutting down a machine to meet the fluctuations of the system daily load curve.

Conclusion

The use of rate of change curves or sometimes called incremental rate method has been discussed in theory in the technical press. For simple cases the examples portrayed have been as easy of solution as the method herein portrayed. The main point of difference between the straight incremental rate method of determining division of load and the method of this article lies in the application to typical cases of machines or plants in which the rate of change curve is not a smooth curve of the type exemplified in the general theory of Part I. To meet this typical, and consequently more general condition, recourse has been made to crude adjustments and rough modifications to the rate of change curves, thus defeating their purpose. The superimposed method of this article uses the significance of the areas under the rate of change curve to successfully overcome the limitations of the straight increment rate method.

In showing an example of this method applied to typical plants as in Part II, it is to be understood that only the ideal to be approached is considered. To provide sufficient running reserve on the system, and in each load area of that system to mitigate the loss of a machine, more machines would be likely to be in operation than are shown as the economic combinations in Figure 15. A series of similar curves should be found for the next best combinations of machines by the same methods and also plotted in this figure. In this way division of system load among plants may still be governed by the curves in this figure, making use of the curves of those combinations which are acceptable to the limitations imposed by practical considerations.

Instead of performance curves involving energy ordinates, costs in dollars could have been used without affecting the manner of using this method. It seems highly probable that this method could also give successful results in problems of load allocation for other types of power plant equipment.

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"Methods of Obtaining Economical System Operation," H. M. Cook, *Mech. Engrg.*, v. 49, 1927, pp. 313-20.

"Dividing Load Between Units," G. R. Davison, *Elec. World*, v. 80, 1922, pp. 1385-7.

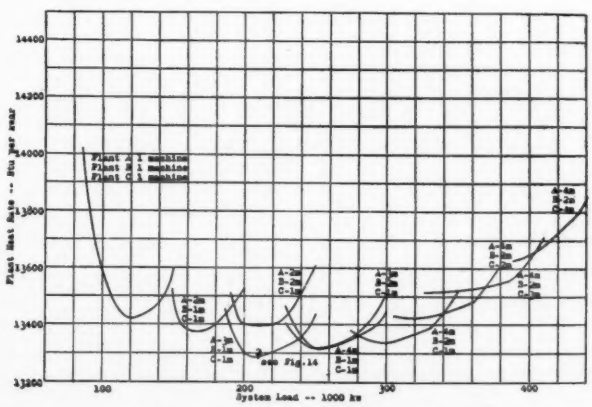

Fig. 15—Combined Plant Heat Rate

N.A.R.U.C. Considers Revised Uniform Classification

THE proposed revised Uniform Clasification of Accounts for Electric Utilities, prepared by the Committee on Statistics of the National Association of Railroad and Utilities Commissioners (mentioned in the October E.E.I. BULLETIN) was not adopted by the Association at its Convention held at Nashville, Tenn., October 15-18. However, it was committed to the Executive Committee, with a resolution calling for a report and recommendations to be presented at the November, 1936, meeting of the Commissioners.

The resolution concerning the proposed Uniform Classification of Accounts reads as follows:

RESOLVED, That the report of the Committee on Statistics and Accounts of Public Utility Companies, together with the Uniform System of Accounts for Electric Utilities, Classes A and B, prepared by said committee and presented in said report, be committed to the Executive Committee with directions to consider all such suggestions for the perfection of said Uniform System of Accounts as have been made, or shall be made, by the Federal Power Commission, the Securities and Exchange Commission, or any State Commission or any association representative of electric utilities, or from any other source from which said Committee may think it desirable to receive suggestions.

Said Executive Committee shall confer with the Committee on Statistics and Accounts of Public Utility Companies concerning such suggestions, and shall consider such recommendations thereon, and such other and further recommendations as said Committee on Statistics and Accounts shall make, at a joint conference to be called by the President of the Association upon request of the Chairman of the Executive Committee: and, following such joint conference, shall prepare a report to be presented to the next annual convention of the Association, recommending the approval and promulgation of said Uniform System, revised to such extent, if any, as said Executive Committee shall judge to be in the public interest, after consideration of such suggested changes, and of such recommendations thereon as the Committee on Statistics and Accounts of Public Utility Companies may make in such joint conference, and shall forthwith distribute copies of said report to the several commissions represented in this Association; and

RESOLVED FURTHER, That the reporters of the proceedings of this convention be authorized to print the report of the Committee on Statistics and Accounts of Public Utility Companies, together with the proposed Uniform System of Accounts aforesaid, separately from other proceedings of this convention, and to charge therefor, the sum of $2.00 per copy, provided that a copy

(*Continued on page* 448)

PUBLICATIONS OF THE INSTITUTE

Pub. No.		*Date Issued*	*Price to Members*	*Price to Non-Members*	*Price to Foreign Countries*
C1	The Electric Light and Power Industry in 1934	(4/35)	$0.30	$0.75	$0.85
C2	Steam and Electrical Requirements of Office Buildings	(4/35)	.30	.75	.85
C4	Boilers, Economizers, Air Heaters and Piping—1935	(7/35)	.60	1.50	1.60
C5	Turbines, Condensers and Feedwater Heaters—1935	(7/35)	.40	1.00	1.10
C6	Combustion—1935	(8/35)	.80	2.00	2.50
C7	Air Conditioning—1935	(9/35)	.50	1.25	1.35
C8	Oil and Gas Engines—1934-1935	(10/35)	.50	1.25	1.35
C9	Methods of Measuring Radio Noise	(11/35)	.15	.35	.45
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B2	Air Conditioning—1934	(5/34)	.75	1.85	2.00
B3	Condensers, Feedwater Heaters, Evaporators, and Boiler Feed Pumps—1934	(6/34)	.45	1.15	1.25
B4	Turbines—1934	(6/34)	.40	1.00	1.10
B5	Station Piping—1934	(7/34)	.60	1.50	1.60
B7	Oil and Gas Engines	(8/34)	.40	1.00	1.10
B8	Steam Generation	(8/34)	.60	1.50	1.60
B9	The Electric Light and Power Industry in 1933	(10/34)	.30	.75	.85
B10	Electrical Energy Diversion	(10/34)	.20	.50	.55
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POWER SALES ITEMS

AIR CONDITIONING

"The Problem of Air Conditioning." *Industrial and Engineering Chemistry,* Industrial Edition, September, 1935, p. 1005. American Chemical Society, Publishers, 330 West 42nd Street, New York City.

A survey of the various methods in use and contemplated for controlling atmospheric conditions.

"Choosing the Right Air Conditioning System." Part 7. By A. W. Canney. *Heating, Piping and Air Conditioning,* October, 1935, p. 469. Keeney Publishing Company, 6 North Michigan Avenue, Chicago, Ill.

The applications of the unit type of air conditioning system, factors involved in locating the equipment, air supply, control of direct expansion units, and the design of coil type jobs.

"Air Conditioning Factory Offices." *Electrical Production,* October, 1935, p. 8. Electrical League of Cleveland, Inc., Publishers, Builders Exchange Building, Cleveland, Ohio.

Benefits and economies obtainable.

"Air Conditioning KDKA Studios," by D. A. Myer, *Electric Journal,* October, 1935, p. 413. Electric Journal, Publishers, 530 Fernando Street, Pittsburgh, Pa.

Calculating the air conditioning load.

"Portable Equipment for Charging Air Conditioning Car Batteries at Railway Terminals," by H. M. Martin. *General Electric Review,* October, 1935, p. 470. General Electric Company, Publishers, Schenectady, New York.

Requisite features of equipment. Protective devices.

"Estimating Air Conditioning Operating Costs . . . Summer Air Conditioning Operating Data for Residences, Restaurants, Stores and Office Buildings." *Heating and Ventilating Magazine,* October, 1935, p. 28. The Industrial Press, Publishers, 148 Lafayette Street, New York City.

"Dehumidifying in Industrial Plant Aids Process . . . If the Manufacturer of Drugs and Serums Is to Continue Operations During Hot and Moist Portions of the Year He Must Have Some Means of Controlling the Air Conditions in His Plant." *Heating and Ventilating Magazine,* October, 1935, p. 32. The Industrial Press, Publishers, 148 Lafayette Street, New York City.

"Cool, Dry Air Improves Luster of Jewels . . . Increases Business of Fifth Avenue Firm Which Modernized by Installing Air Conditioning Units." *Heating and Ventilating Magazine,* October, 1935, p. 39. The Industrial Press, Publishers, 148 Lafayette Street, New York City.

DIESEL ENGINES

"Waste Heat Recovery from Diesel Engines," by E. Elmisen. *Power Plant Engineering,* October, 1935, p. 572. Technical Publishing Company, Monadnock Block, 53 West Jackson Blvd., Chicago, Ill.

Charts facilitate the solution of problems involving the amount of steam or hot water available from 2 cycle engines.

"Financing Small Power Plants," by D. H. Dashiell, Consulting Engineer. *Diesel Power,* October, 1935, p. 641. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

The author outlines the method by which small industries may obtain private power plants through the Federal Housing Act.

"Buy the Power Plant Through the Federal Housing Act." *Diesel Power,* October, 1935, p. 640. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

An article which describes in brief the revised Modernization Credit Plan.

"Power and Poker," by Donald McFee. *Diesel Power,* October, 1935, p. 638. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

An almost-guaranteed method of getting a reduction in electric power costs is outlined.

"Providence, R. I., Ice Plant Meets Competition with Diesels." *Diesel Power,* October, 1935, p. 643. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

Describes in brief the Diesel plant installed by W. B. Chaffee of Providence, R. I., giving the cost per ton of ice produced.

"Polhemus Memorial Clinic Modernizes Power and Heating Plant." *Diesel Power,* October, 1935, p. 644. Diesel Publications, Inc., Publishers, 192 Lexington Avenue, New York City.

Describes the relatively inexpensive program of power plant modernization in which Diesel power was substituted for steam.

ELECTRIC MOTORS

"Control of Squirrel Cage Motors for Heating and Air Conditioning Service," by N. D. Buehling. *Heating, Piping and Air Conditioning,* October, 1935, p. 480. Keeney Publishing Company, 6 North Michigan Avenue, Chicago, Ill.

With standard automatic motor control equipment it is possible to devise control systems to accomplish practically any desired object.

"High Frequency for High-Speed Motors," by G. H. Hall. *Electrical World,* October 12, 1935, p. 2442. McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York City.

Factors affecting selection of power sources and motors for drives that require compact motors or omission of intermediate transmission.

INDUSTRIAL APPLICATION

"Electric Container Capper." *Modern Packaging,* September, 1935, p. 78. Breskin & Charlton Publishing Corporation, 425 Fourth Avenue, New York City.

Uniform tightening of caps, increased production, and elimination of danger of leakage claimed for this device.

INDUSTRIAL POWER

"Power at Work in Industry." *Electrical World,* September 28, 1935, p. 56. McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York City.

Three articles dealing with industrial use of power, which contain ideas for power sales:

1. Cuts Plastics with Electric Heat
2. 22 Ft. Candles for Department Store
3. Close Limits on Carbon Content.

"Building up the Load." *Electrical World,* September 28, 1935, p. 68. McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York City.

Three articles dealing with industrial "Power at Work in Industry." *Electrical*

1. Pay Less for Power Sales
2. Saves Cost in Restaurant Business
3. Printing Press Light Requirements.

"Industrial Power Survey." *Electrical World,* September 14, 1935, pp. 36-37. McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York City.

This article is a résumé of replies to questionnaires sent out to 49 large utilities regarding the trend of power sales for 1934 and 1935.

LIGHTING

"Highway Lighting—Face to Face," by Earl Whitehorne. *Electrical World,* September 28, 1935, p. 32. McGraw-Hill Publishing Company, Inc., 330 West 42nd Street, New York City.

An article giving the vital part the power companies have to play in reducing traffic fatalities in America.

PAPER MILLS

"Power Distribution in Paper Mill." *Paper Trade Journal,* January 17, 1935, p. 45. Lockwood Trade Journal Company, Inc., Publishers, 15 West 47th Street, New York City.

Voltage determination, motor and control types for old and new pulp and paper mills.

PIPE LINES

"Purchased Power for Pipe Lines." The *Oil and Gas Journal,* October 24, 1935, p. 104. Petroleum Publishing Company, Inc., 114 West Second Street, Tulsa, Oklahoma.

The various factors involved and the relative cost compared with engine-driven pumps analyzed.

POWER PLANTS

"Power Plant Performance at the World's Largest Distillery," by W. F. Biggs. *Power Plant Engineering,* October, 1935, p. 544 Technical Publishing Company, Monadnock Block, 53 West Jackson Blvd., Chicago, Ill.

Hiram Walker & Sons, Inc., distillery at Peoria, Ill., completes year's operation with marked success.

N.A.R.U.C. Considers Revised Uniform Classification

(*Continued from page* 445)

thereof shall be supplied to each commission represented in this Association, without charge, with each copy of the proceedings of this convention which shall be purchased by such Commission.

Other resolutions adopted at the Convention include:

(1) amending Article IX of the Constitution to discontinue the Committee on Publication of Commissions' Decisions;

(2) creating a Special Committee on Progress in Public Utility Regulation, to be appointed by the President of the Association;

(3) creating a Special Committee, to be appointed by the President, to recommend a method to be established for the selection of cooperating commissioners in cases pending before Federal Commissions in which cooperation has been suggested, but which involve so many states that it is not practicable for a commissioner from each State to sit therein;

(4) memorializing the legislatures in the several States to make adequate appropriations for the maintenance of commission work;

(5) recommending the adoption by member commissions of the Uniform System of Accounts for Telephone Companies, promulgated by the Federal Communications Commission, by its order No. 7(c) of the Telephone Division of said Commission, dated June 19, 1935;

(6) favoring the enactment of Federal legislation vesting jurisdiction in some one of the existing Federal regulatory commissions to regulate the service of supplying gas, artificial or natural, produced in one State and sold at wholesale to a distributing company in another State, including rates applicable to such service, but so drawn as not to limit or impair the powers of the States to regulate intrastate and local service and rates;

(7) directing the General Solicitor in cooperation with other State commission counsel to file a brief *amicus curiae* on behalf of this Association in *New York Edison Company et al* vs. *Maltbie et al.*, pending in the Court of Appeals of the State of New York, and involving the validity of certain provisions of the New York Commission's classification of accounts.

Officers of the Association elected for the ensuing year were the following:

President, Frank P. Morgan of Alabama.

First Vice-President, Thomas F. McKay of Utah.

Second Vice-President, Alexander M. Mahood of West Virginia.

Secretary, Clyde S. Bailey of Washington, D. C.

Assistant Secretary, Robert E. May of Washington, D. C.

General Solicitor, John E. Benton of Washington, D. C.

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CONVENTIONS AND MEETINGS

NOVEMBER

7-8 Indiana Electric Light Association, Purdue University, Lafayette, Ind.
18 Interstate Power Club, Shelton Hotel, New York, N. Y.
25-26 Arkansas Utilities Association, Arlington Hotel, Hot Springs, Ark.

DECEMBER

2-6 American Society of Mechanical Engineers, New York, N. Y.

JANUARY, 1936

28-31 American Institute of Electrical Engineers, New York, N. Y.

FEBRUARY

10-11 Electrical Equipment Committee, Statler Hotel, Buffalo, N. Y.
13-14 Transmission and Distribution Committee, Netherlands Plaza Hotel, Cincinnati, Ohio.

JUNE

17-20 The American Society of Mechanical Engineers, Dallas, Texas.

GEORGE A. HUGHES AWARD

Extension of Registration Date

So many utility companies desire to submit a report for competition in the Hughes Award for range sales performance for the calendar year 1935 that the date for filing notice of entry is extended to December 1, 1935.

On or before that date, all companies wishing to enter the contest must register the total number of household domestic meters (family units) connected, and the number of electric ranges connected as of January 1, 1935.

Reports do not have to be filed at Institute Headquarters until on or before April 1, 1936.

A Cup goes to the winning company; $500.00 is awarded to the Commercial or Merchandising Executive in the winning company and $500.00 is to be divided among the retail directors and salesmen.

Build interest, and build revenue, by joining in the contest.